

IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for Conservation

Revised and updated 2nd Edition Vol. I



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**Second Edition: Revised and Updated
Volume I**

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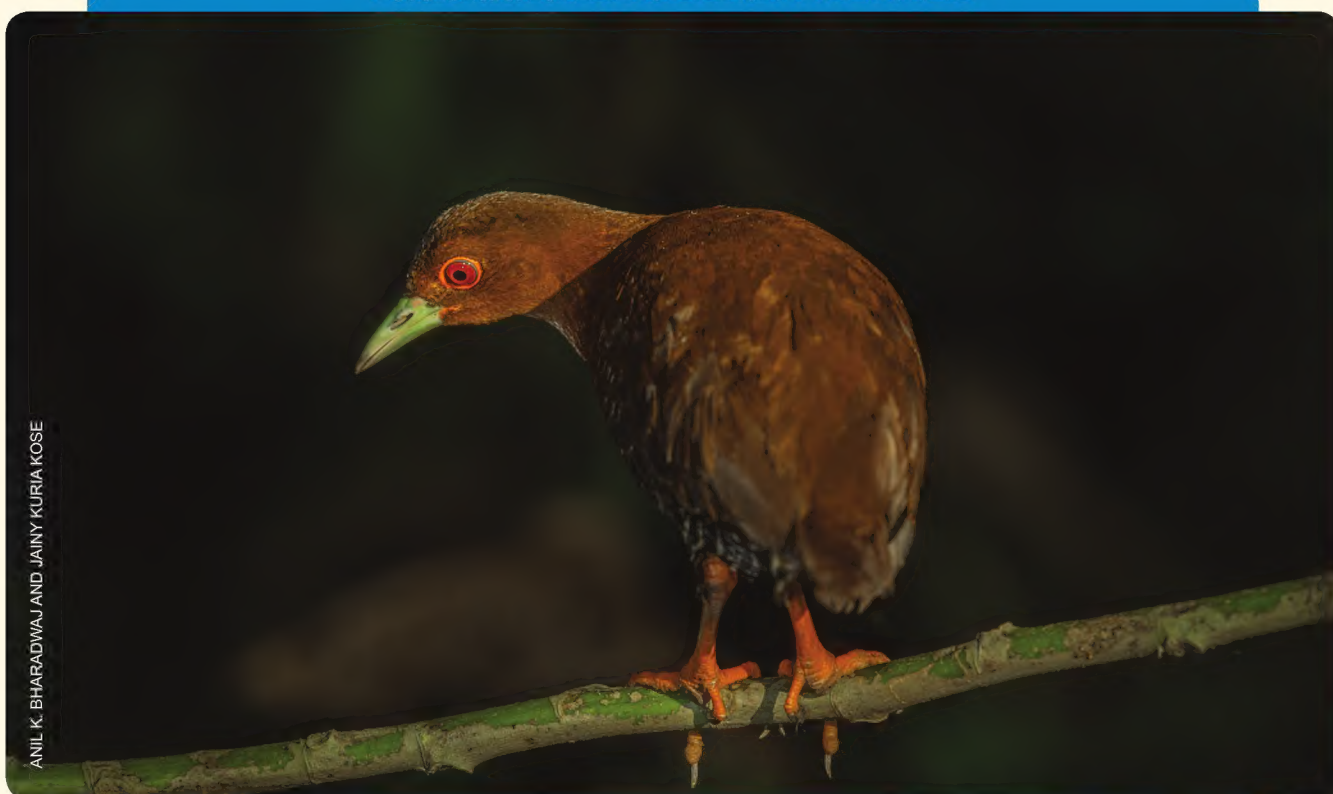
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ANDAMAN & NICOBAR ISLANDS

IN-AN



ANIL K. BHARADWAJ AND JAINY KURIA KOSE

Great Nicobar Crake *Rallina* sp. is perhaps a new species of genus *Rallina*, yet not fully described. It has been recently photographed in the Great Nicobar Island

The Andaman & Nicobar Islands in the Bay of Bengal are peaks of a submerged mountain chain, comprising more than 572 islands and islets. The total geographical area of this Union Territory is 0.82 million ha. It lies between 6° 45'–13° 45' N and 92° 00'–94° 18' E, and extends over 800 km. These islands are the summits of a mountain range atop the great tectonic zone that extends from the Eastern Himalaya along the Arakan Yoma of lower Myanmar in the north, to Sumatra and the Lesser Sundas in the south. They comprise the main island chains of Andaman and Nicobar, Ritchie's Archipelago, and the two volcanic islands, Barren and Narcondam.

The Andaman group extends over 6,340 sq. km and the Nicobar group consists of a total of 1,953 sq. km (Alfred *et al.* 2002). The Andaman group has 324 islands, of which 25 are inhabited. Great Andaman includes five closely adjoining islands – North Andaman, Middle Andaman, South Andaman, Baratang, and Rutland Islands – separated by narrow channels, while Little Andaman Island is separated from the Andaman Islands group by a deep channel known as Duncan Passage. Similarly, the Nicobar group is made up of 28 islands, of which 13 are inhabited. The Nicobar group of islands has three main clusters: Car Nicobar, Middle Nicobar, and Great Nicobar (Alfred *et al.* 2002).

North Andaman is 285 km from Cape Negaris, south Myanmar which segregates it by a 225 m deep channel known as North Preparis. Great Nicobar, the southernmost

island, is just 189 km away from the Acheen Head of Western Sumatra and is separated from it by a 1,600 m deep channel known as the Great Channel.

The Andaman & Nicobar Islands have an undulating terrain with hill ranges generally running from north to south with intervening valleys. The highest peak in the Andamans is Saddle Peak in North Andaman, with an altitude of 726 m, while in the southernmost Great Nicobar Island it is Mount Thullier (670 m), the third highest peak after the isolated extinct volcanic island of Narcondam, which is 710 m high.

There are three districts: i. South Andaman (3,100 sq. km), which has Port Blair as its headquarters and a human population of 238,142 (Census 2011); ii. North and Middle Andaman (3,302 sq. km) with headquarters at Mayabunder and a human population of 105,597 as per the 2011 census, and iii. Nicobar, with Car Nicobar (1,841 sq. km) as its headquarters and a human population of 36,842.

The entire Union Territory is divided into six subdivisions and nine *tehsils* (counties).

Diglipur and Mayabunder consist of three *tehsils*: (a) Diglipur, (b) Mayabunder, and (c) Rangat. South Andaman has one subdivision and three *tehsils*: (a) Port Blair, (b) Ferrargunj, and (c) Little Andaman.

Nicobar (1,841 sq. km) has three *tehsils*: (a) Car Nicobar (b) Nancowry, and (c) Campbell Bay.

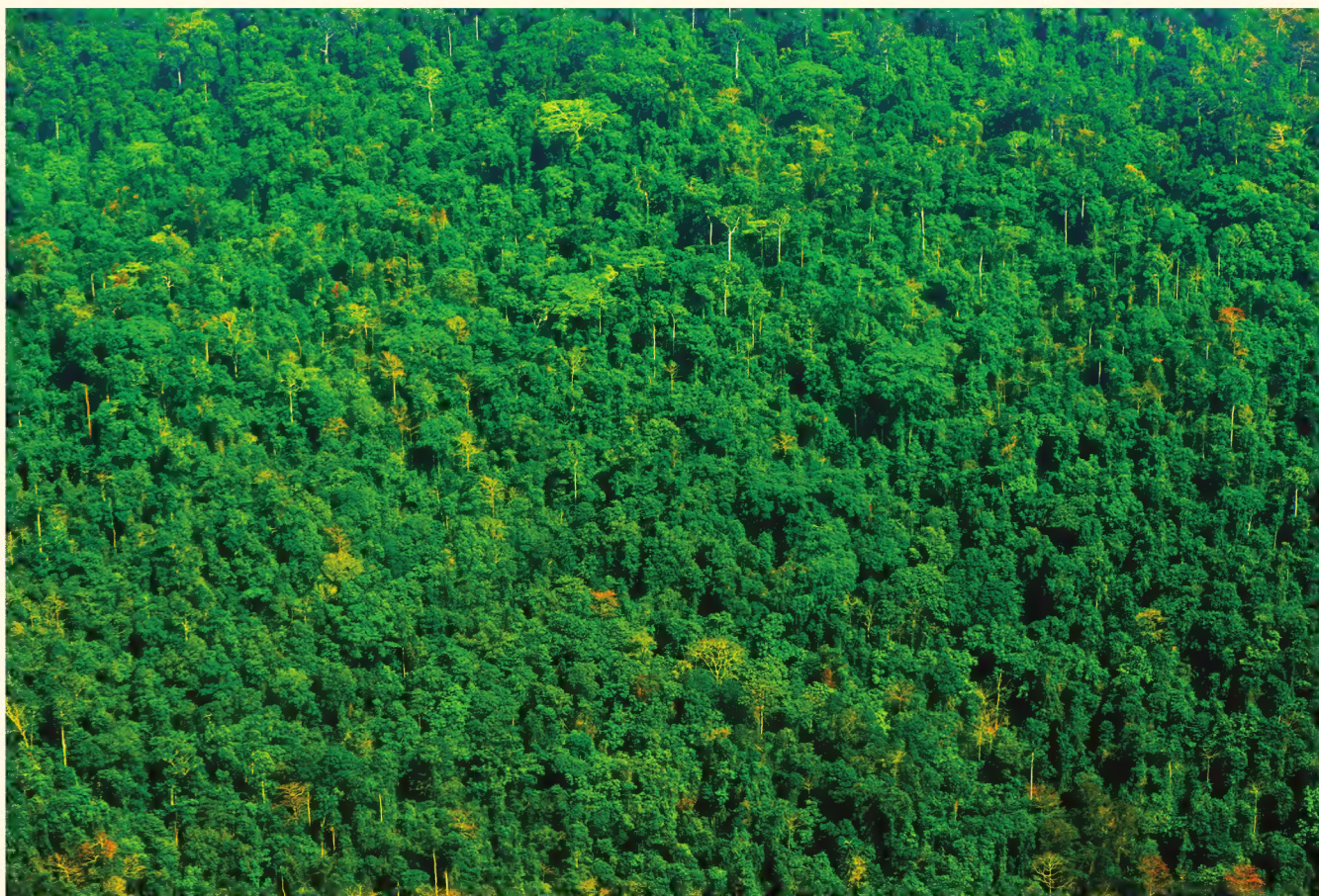
These groups of islands are known to have had human settlements comprising primitive or aboriginal tribes of negrito and mongoloid origin, since at least two thousand years. Currently, they are known as Particularly Vulnerable Tribes. The first modern settlement was established in the North Andamans in 1789 (Mathew 2003). During India's freedom struggle, so-called rebels or political activists and life convicts from mainland India were sent to the infamous Kala Pani Penal Settlement at Port Blair in South Andaman, where they were incarcerated in the Cellular Jail, now a national memorial. After India's Independence in 1947, the Indian government facilitated the settlement of ex-servicemen and refugees from the Indo-Pak partition on the islands. Protection to the indigenous tribes was provided under the Protection of Aboriginal Tribes Regulation, 1956. In 1956, these islands became a Union Territory under the control of the President of India.

The total population of these islands increased from 0.36 million in 2001 to 0.38 million in 2011, of which 67.3% is rural and 32% is urban (Census 2011). About 90.32% inhabit the Andaman Islands and the rest the Nicobar Islands. Between 2001 and 2011, the average population density increased from 43 persons per sq. km to 46 persons per sq. km. Literacy rate is 86.6%. Tribes constitute 7.61% of the total population. Four Particularly Vulnerable negrito tribes,

the Great Andamanese, Jarawa, Onge, and Sentinelese, inhabit the Andamans. Tribes of mongoloid origin, the Nicobaris and Shompens, inhabit the Nicobar group. The livestock population is 0.17 million, mostly consisting of goats and pigs (0.115 million), while the remaining are cows and buffaloes.

The climate of these islands is humid tropical. The average annual rainfall is more than 3,000 mm and the average annual temperature varies from 24 °C to 28 °C, with an average relative humidity of up to 80%, sometimes going up to a maximum of 95% in most of the months, as the islands receive both the southwest monsoon and the northeast or retreating monsoon.

The devastating mega earthquake and the resultant tsunami of December, 2004 severely damaged the islands, especially the coastal ecosystems, and caused serious loss to human life. Its impact is still being felt even after 10 years. Ramachandran *et al.* (2005) studied tsunami-induced damage to coastal ecosystems in four Nicobar Islands, namely Camorta, Katchal, Nancowry, and Trinket. The extent of damage assessed ranged from 51 to 100% for mangrove ecosystems, 41 to 100% for coral reef ecosystems, and 6.5 to 27% for forest ecosystems. However, over the years, apart from the areas which were permanently damaged due to uplifting or subduction of the land, the coastal vegetation



DRITIMAN MUKHERJEE

Almost 85% of the land in Andaman & Nicobar Islands is covered with forest

DHRITIMAN MUKHERJEE



The Andaman group has 324 islands, of which 25 are inhabited. Out of 28 islands in the Nicobar group, 13 are inhabited

and coral reefs are slowly recovering and returning to their normal composition.

Vegetation

According to the Forest Survey of India (FSI) report of 2013, the total recorded forest area of the islands is 0.71 million ha, which constitutes 86.93% of the land area. The Reserved and Protected Forests constitute about 78.27% and 21.73% respectively. Encroachment by the settlers in the revenue and forest land has led to the decrease of forest cover in Little Andaman, Diglipur, and Havelock. However, according to the FSI report, the actual forest cover under various categories –Very Dense to Open and Scrub – constitutes only 0.67 million ha or 81.36% of the total land area. There are five forest types, namely Tropical Wet Evergreen, Tropical Semi-evergreen, Tropical Moist Deciduous, Littoral, and Swamp Forests.

From these islands, 2,395 terrestrial plant species and 118 species of marine algae have been reported. The terrestrial flora consists of 2,200 species of angiosperms, 130 species of pteridophytes, 50 species of lichens, and 15 species of mosses and hepatics (Alfred *et al.* 2002).

Tropical Wet Evergreen Forest is seen throughout the islands and moist valleys. Southern Hilltop Evergreen Forests are seen on hilltops and steep slopes, and are usually exposed to high winds. Some of the species of these forests are *Dipterocarpus costatus*, *Mesua ferrea*, *Canarium manni*,

Hopea helferi, and *Cratoxylum formosum*. Semi-evergreen Forests also constitute an important part of the vegetation of these islands, which include both deciduous and evergreen species. According to Alfred *et al.* (2002), these are mostly confined to the main valleys on well-drained immature alluvial soil. Some of the species found in these forests are *Terminalia bialata*, *Terminalia procera*, *Pterygota alata*, *Albizia chinensis*, and *Pterocarpus dalbergioides*. Moist Deciduous Forests are found on hilly ground below 100 m. Here the trees can grow up to 40 m, with a girth of 3 m. These forests are being exploited mostly for timber. *Pterocarpus dalbergioides*, *Diospyros marmorata*, *Terminalia procera*, *Sageraea elliptica*, and *Albizia lebbek* are some of the species found in these forests. Littoral Forests are found on alluvial or sandy soils just above the high tide line. Some of the common species of these forests are *Mimusops littoralis*, *Tetrameles nudiflora*, and *Terminalia catappa*. Forests of mangroves are found in the intertidal zone along the tidal creeks, sheltered coasts, and bays. Some of the mangroves found on the outer seaward fringe are *Rhizophora mucronata* and *R. apiculata*. In the tidal creeks, *Bruguiera gymnorhiza*, *B. parviflora*, *Avicennia officinalis*, *Ceriops tagal*, *Kandelia candel*, *Xylocarpus granatum*, and *Lumnitzera littorea* are some of the species found in tidal swamps. Near the creeks where there is incursion of fresh water, and adjacent to the land, there is predominance of *Nypa fruticans*, with *Phoenix paludosa* and *Acanthus ilicifolius* as undergrowth.

IBAs of Andaman & Nicobar

IBA site codes	IBA site name	IBA criteria
IN-AN-01	Austin Strait	A1, A2
IN-AN-02	Baratang-Rafters Creek	A1, A2
IN-AN-03	Car Nicobar	A1, A2
IN-AN-04	Chainpur & Hanspuri	A1, A2
IN-AN-05	Great Nicobar & Little Nicobar	A1, A2
IN-AN-06	Interview Island Wildlife Sanctuary	A1, A2
IN-AN-07	Jarawa Reserve	A1, A2
IN-AN-08	Kadakachang	A1, A2
IN-AN-09	Landfall Island Wildlife Sanctuary	A1, A2
IN-AN-10	Little Andaman	A1, A2
IN-AN-11	Mahatma Gandhi Marine National Park	A1, A2
IN-AN-12	Mount Diavalo-Cuthbert Bay	A1, A2
IN-AN-13	Mount Harriet National Park	A1, A2
IN-AN-14	Narcondam Island Wildlife Sanctuary	A1, A2
IN-AN-15	North & South Sentinel Island	A1, A2
IN-AN-16	North Reef Island Wildlife Sanctuary	A1, A2
IN-AN-17	Rani Jhansi Marine National Park	A1, A2
IN-AN-18	Saddle Peak National Park	A1, A2
IN-AN-19	Tillangchong, Camorta, Katchal, Nancowry, Trinket	A1, A2

According to the Survey of India report of 1999, the plantation of Teak *Tectona grandis* began in 1954 after clear-felling patches of Moist Deciduous forest. Other native species such as *Albizia lebbek*, *Lagerstroemia hypoleuca*, *Terminalia procera*, and matchwood species *Bombax insigne*, and *Sterculia campanulata* were planted on a limited scale, but plantations were stopped in the mid-1970s as the

growth of teak especially was not found good. Subsequently, monoculture was stopped on forest land after the Forest Conservation Act, 1980 came into force; clear-felling was also stopped. Plantation, however, continues along roadsides and on vacant land. By the mid 1970s, the Forest Development Corporation had also planted 1,600 ha of Red-oil Palm and 600 ha of Rubber plantations, which were raised under the



High endemism is seen in the reptiles in Andaman & Nicobar. Some species are confined to a few islands and found nowhere else in the world

DHIRTIMAN MUKHERJEE

List of threatened birds with IBA site codes

CRITICALLY ENDANGERED		
Christmas Island Frigatebird <i>Fregata andrewsi</i> (Stray record)		Ringat Bay
ENDANGERED		
Narcondam Hornbill	<i>Aceros narcondami</i>	IN-AN-14
VULNERABLE		
Andaman Teal	<i>Anas albogularis</i>	IN-AN-01, 02, 04, 06, 08, 10, 12, 16, 17, 18
Nicobar Sparrowhawk	<i>Accipiter butleri</i>	IN-AN-03, 05, 19
Nicobar Megapode	<i>Megapodius nicobariensis</i>	IN-AN-05, 19
Great Knot (Stray record)	<i>Calidris tenuirostris</i>	None
NEAR THREATENED		
Swinhoe's Storm-petrel	<i>Oceanodroma monorhis</i>	Not available
Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>	IN-AN-03, 05, 19
Andaman Serpent-eagle	<i>Spilornis elgini</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Crake	<i>Rallina canningi</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 11, 12, 13, 15, 17, 18
Beach Thick-knee	<i>Esacus magnirostris</i>	IN-AN-08, 16 (could be present in many more IBAs)
Andaman Wood-pigeon	<i>Columba palumboides</i>	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Nicobar Pigeon	<i>Caloenas nicobarica</i>	IN-AN-02, 03, 05, 07, 10, 11, 13, 15, 17, 19
Nicobar Parakeet	<i>Psittacula caniceps</i>	IN-AN-05
Alexandrine Parakeet	<i>Psittacula eupatria</i>	IN-AN-07, 14 (could be present in many more IBAs)
Red-breasted Parakeet	<i>Psittacula alexandri</i>	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Long-tailed Parakeet	<i>Psittacula longicauda</i>	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Andaman Scops-owl	<i>Otus balli</i>	IN-AN-02, 07, 08, 10, 11, 12, 13, 14, 15, 17, 18
Andaman Hawk-owl	<i>Ninox affinis</i>	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Nicobar Bulbul	<i>Hypsipetes nicobariensis</i>	IN-AN-19
Andaman Woodpecker	<i>Dryocopus hodgei</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Drongo	<i>Dicrurus andamanensis</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Treepie	<i>Dendrocitta bayleyi</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
DATA DEFICIENT		
Nicobar Scops-owl	<i>Otus alius</i>	Not available

rehabilitation scheme for Tamil plantation workers from Katchal Island which was then in Burma.

Among mammals, the Crab-eating Macaque *Macaca fascicularis* is found in the Nicobars. Of the 58 species of mammals recorded from the islands, there are 31 species of bats and 21 species of rodents (Das 1999a, Aul 2002b, Andrews & Sankaran 2002). Wild Pig *Sus scrofa andamanensis* and *S. s. nicobarensis* are found in Andaman & Nicobar (Rosalind 2002), while the Palm Civet is found only in the Andamans (Alfred *et al.* 2002). Two species of tree shrews of the genus *Crocidura* are known from the Andamans, *Crocidura andamanensis* and *C. jenkinsi*. Both are endemic to the Andamans (Chakraborty 1978, Das 1999a). In the Nicobars, two subspecies of tree shrews occur, *Tupaia nicobarica nicobarica* on Great Nicobar Island, and *T. nicobarica surda* on Little Nicobar Island.

Cetaceans include dolphins and whales. Dolphin species such as Indian Humpback Dolphin *Sousa chinensis*, Long-

beaked Common Dolphin *Delphinus capensis*, Long-snouted Spinner Dolphin *Stenella longirostris*, Pan-tropical Spotted Dolphin *Stenella attenuata*, Rough-toothed Dolphin *Steno bredanensis*, and Grey Dolphin *Grampus griseus* are found here. Whales such as Short-finned Pilot Whale *Globicephala macrorhynchus*, Melon-headed Whale *Peponocephala electra*, Killer Whale *Orcinus orca*, False Killer Whale *Pseudorca crassidens*, Sperm Whale *Physeter macrocephalus*, and Pygmy Sperm Whale *Kogia breviceps* are reported from the islands of Andaman & Nicobar. One species of herbivorous marine mammal, i.e. the Sea Cow or Dugong *Dugong dugon* is also found here.

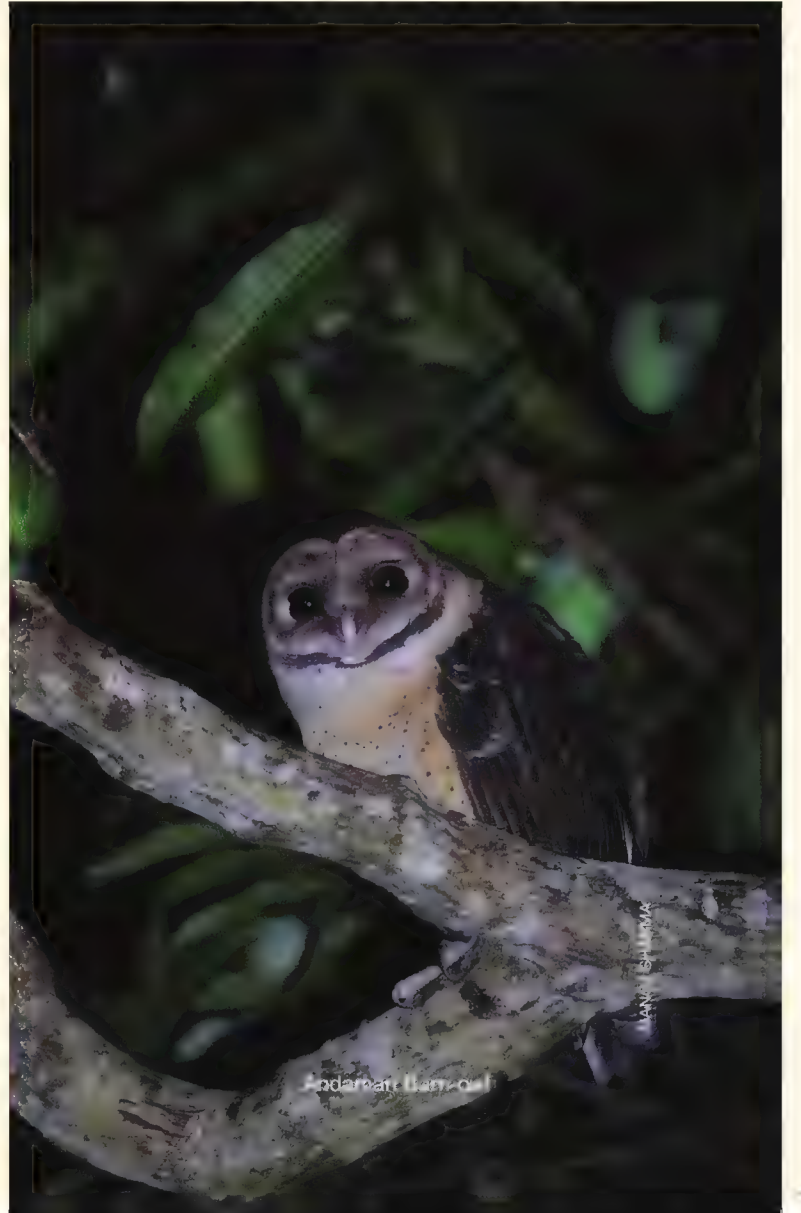
Several varieties of snakes, geckos, and lizards are found, including the Salt Water or Estuarine Crocodile *Crocodylus porosus*, and Andaman and Nicobar Water Monitors, which are now two distinct endemic species. Of the 78 species of reptiles and 18 species of amphibians from these islands, 16 species of reptiles and seven species of amphibians are



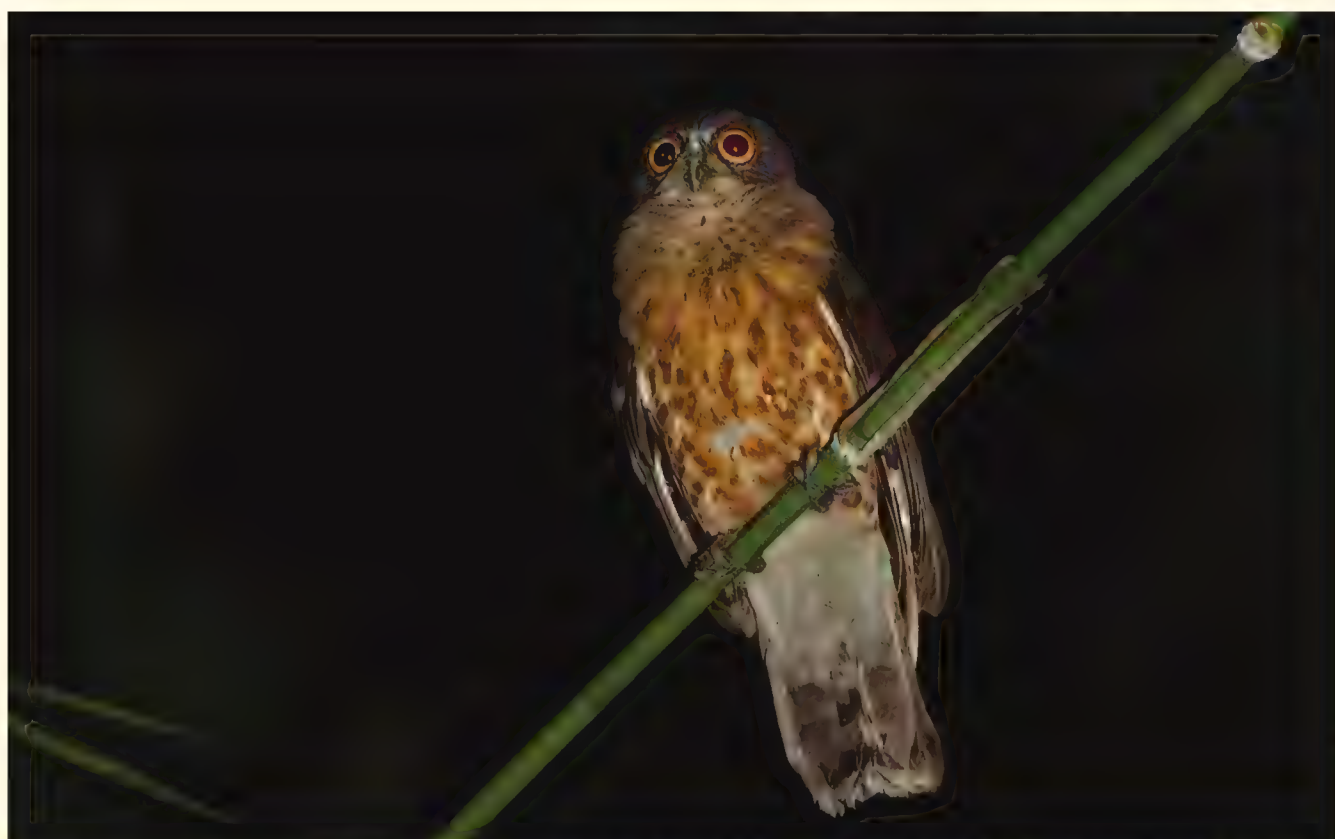
Andaman & Nicobar Islands are the cradle of evolution and speciation, best exemplified by the presence of endemic owl species



Andaman Scops-owl



Andaman Hawk-owl



SHASHANK DALVI

Brown Hawk-owl *Ninox scutulata* is a complex group of hawk-owls with 4-5 subspecies or races. The Nicobar race *isolata* (above) is sometimes included in Andaman Hawk-owl *Ninox affinis*. There is a need to conduct genetic and vocalization studies to unravel the taxonomic enigma of the hawk-owls of India

endemic to the Andamans, while 15 species of reptiles and two species of amphibians are endemic to the Nicobars (Das 1999b, Andrews 2001). Recently, Harikrishnan *et al.* (2010) have listed 40 species of reptiles and eight species of amphibians from the Andamans, and 47 species of reptiles and 10 species of amphibians from the Nicobars.

Sixteen percent of all vertebrates known from Great Nicobar Island are endemic to Andaman & Nicobar. Of these, mammals contain the maximum endemic species (47%) relative to their faunal size. As many as 25% of the reptilian species and 23% of the amphibian species on Great Nicobar are endemic to Andaman & Nicobar. Endemism is least among birds (10.5%) and fish (3%). Patterns of distribution of vertebrate diversity and endemic species on Nicobar do not indicate localization. Coastal habitats are as rich in both vertebrate species and in endemics as the rainforests on Nicobar. Habitat specialization does not finely segregate the vertebrates of Great Nicobar Island (Daniels *et al.* 1997).

Four species of endangered marine turtles nest on the sandy beaches of the islands. Sea grasses in shallow coastal waters and sheltered bays (Gandhi 2000) support a highly threatened population of Dugong *Dugong dugon*, one of the most prominent marine Vulnerable mammals (IUCN 2000). Common Dolphin *Delphinus delphis* can also be seen near the shore or in the open sea beyond, as well as the Endangered Blue Whale *Balaenoptera musculus* and Sperm

Whale *Physeter catodon* which is Vulnerable (IUCN 2000, Gandhi 2000, Andrews & Sankaran 2002).

Introduced to the islands are large mammals such as Spotted Deer *Axis axis*, Barking Deer or Muntjac *Muntiacus muntjak*, and Asiatic Elephant *Elephas maximus*. Spotted Deer is now widespread throughout the Andamans, while Barking Deer is found on Baratang and Middle Andaman Islands. Elephants became feral after the discontinuation of logging (Ali 2000, Aul & Ali 2001). Altogether 820 marine fish species are recorded, some in abundance and commercially important like the sardines, anchovies, perches, silver bellies, Carangids, mackerel, seer fish, mullets, tuna, and pomfret (Tikader & Das 1985).

Among invertebrates, 2,514 species have been reported from these islands, which equal 86.1% of the total inland animal species (Alfred *et al.* 2002). According to Ramakrishnan *et al.* (2010), the diversity of crustaceans is very high, totalling 837 species, including 161 species of prawns, six species of lobsters, 544 species of Brachyuran crabs, and 40 species of hermit crabs. Similarly, molluscan diversity is very high. A total of 1,282 species have been recorded, and 51 species of gastropods and bivalves have been reported from these islands (Subba Rao *et al.* 1980).

The snake fauna of the Nicobar Islands is composed of 19 species of non-marine and three marine snakes. The highest number of species was observed in the forests



Arctic Warbler *Phylloscopus borealis* in Nicobar

and the encounter rate was greater in streams, ponds, and caves. Grasslands, though extensive in the Central Nicobars, support very few species. *Trimeresurus cantori* was identified as the most commonly encountered species in the Central Nicobars. The encounter rate for *T. cantori* was more than twice that of the next common species, *T. labialis* (Vijayakumar & David 2006). New species are being discovered, for example, Das & Vijayakumar (2009) described a new species of gecko *Ptychozoon nicobarensis* from the Central Nicobars. It was formerly referred to as *P. kuhli*, another species widely distributed in Sundaland.

IBAs AND PROTECTED AREAS

There are nine national parks and 94 wildlife sanctuaries covering an area of 0.15 million ha, of which only 18.53% is terrestrial. The major part of Great Nicobar Island has been declared a Biosphere Reserve. In addition to the PAs, there are large forest areas in the Andamans which are declared as Tribal Reserves under the Protection of Aboriginal Tribes Regulation. These areas are inviolate, and even entry of local settlers is banned. The entire Nicobar District is also declared as a Tribal District, with restriction of entry on outsiders. The Wildlife (Protection) Act is not applicable to the tribals of these islands, as a specific provision under Section 65 of the Act provides that rights of Scheduled Tribes are protected, specially hunting rights. Therefore, they can

hunt even the scheduled species for their own consumption. The largest group, the Nicobarese tribe, is relatively modern and the way of life has changed over the years, with very little hunting, which is restricted to some smaller islands or remote hamlets only. In 2004, 19 sites were identified as IBAs (Islam & Rahmani 2004).

AVIFAUNA

The Andaman & Nicobar Islands constitute a globally important biodiversity hotspot. Because they are off the mainland and isolated, endemism is very high in all taxa, but especially in reptiles, plants, fish, and corals. These islands are one of the Endemic Bird Areas (Stattersfield *et al.* 1998). In the Andaman group, 13 bird species are considered restricted-range and in the Nicobar group, nine (Stattersfield *et al.* 1998). The diversity at the subspecies level is very high, with different subspecies present on different islands on account of their geographical separation (Gandhi 2000). Most of the restricted-range birds are forest species in the Andamans and many can be seen near Port Blair (Curson 1989). Most of them can be seen easily in the Middle and South Andaman and the Great Nicobar group, and many of them are restricted to these islands (Stattersfield *et al.* 1998). For example, Nicobar Parakeet *Psittacula caniceps* is confined to the Great Nicobar group, while Nicobar Bulbul *Hypsipetes nicobariensis* is present only in the Nancowry



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Recently, Nicobar Jungle-flycatcher *Cyornis nicobaricus* has been recognized as a separate species, endemic to Great and Little Nicobars. Earlier, it was considered conspecific with Brown-chested Jungle-flycatcher *Cyornis brunneatus* which breeds in north-east China and winters in Southeast Asia

group. Similarly, the Andaman Scops-owl *Otus balli* is found in Narcondam and South Andaman (Stattersfield *et al.* 1998). An extreme form of endemism is shown by the Narcondam Hornbill *Aceros narcondami* which is confined to Narcondam Island, an area of 7 sq. km only. Among Indian birds, the Narcondam Hornbill has the smallest area of occupancy.

About 270 bird species and subspecies have been reported from these islands (Sankaran & Vijayan 1993), of which 126 were recorded only from the Andamans and 56 from the Nicobars (Andrews & Sankaran 2002). Among the 13 restricted-range species, three are globally Threatened, the Nicobar Megapode found in the forest and secondary growth, the Andaman Crake, a bird of marshland in the forested areas, streams, and mangrove creeks, and the Narcondam Hornbill, found on Narcondam Island. The third species, Christmas Island Frigatebird, we have only stay record.

GLOBALLY THREATENED, NEAR THREATENED AND RESTRICTED-RANGE BIRD SPECIES

Narcondam Hornbill *Aceros narcondami*

Endangered

This Endangered hornbill has a small population on a tiny island less than 7 sq. km in area, known as Narcondam Island. Its population is stable since feral goats were culled by the armed forces. It is roughly estimated that about 68–85 breeding pairs are present on the island (BirdLife

International 2001), with a population of about 400 hornbills (Yahya & Zarri 2002). Recent studies by SACON scientists show that it is much more common than estimated earlier (Shirish Manchi, *pers. comm.* 2014).

Nicobar Megapode *Megapodius nicobariensis*

Vulnerable

This megapode comes under the Vulnerable category of IUCN and has a declining population, as a result of the destruction of coastal forests and hunting (BirdLife International 2001, 2014). This megapode is one of the three bird species entirely restricted to the Nicobar Islands (Stattersfield *et al.* 1998). The main threat to this bird is hunting for meat and egg collection (Sankaran 1995a, b; BirdLife International 2001; Rahmani 2012). Earlier its breeding population was estimated to range between 625–1,090 breeding pairs (Sankaran 1995b), but after the 2004 tsunami and increased hunting, it is now (2006 data) estimated to vary between 98 and 196 breeding pairs (Sivakumar 2010). It has been reported from Batti Malv, Tillanchong, Little Nicobar, and all around Great Nicobar Island.

Andaman Crake *Rallina canningi*

Near Threatened

This crake is endemic to the Andaman group of islands and absent from the Nicobars (Ali & Ripley 1987). It

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS		
Andaman Serpent-eagle	<i>Spilornis elgini</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Crake	<i>Rallina canningi</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 11, 12, 13, 15, 17, 18
Andaman Wood-pigeon	<i>Columba palumboides</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Coucal	<i>Centropus andamanensis</i>	IN-AN-02, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Scops-owl	<i>Otus balli</i>	IN-AN-02, 07, 08, 10, 11, 12, 13, 14, 15, 17, 18
Andaman Hawk-owl	<i>Ninox affinis</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Narcondam Hornbill	<i>Aceros narcondami</i>	IN-AN-14
Andaman Woodpecker	<i>Dryocopus hodgei</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
White-headed Starling	<i>Sturnus erythropygius</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 17, 18
Andaman Drongo	<i>Dicrurus andamanensis</i>	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Treepie	<i>Dendrocitta bayleyi</i>	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
ENDEMIC BIRD AREA 126: NICOBAR ISLANDS		
South Nicobar Serpent-eagle	<i>Spilornis klossi</i>	IN-AN-03, 05, 19
Nicobar Sparrowhawk	<i>Accipiter butleri</i>	IN-AN-03, 05, 19
Nicobar Megapode	<i>Megapodius nicobariensis</i>	IN-AN-05, 19
Andaman Wood-pigeon	<i>Columba palumboides</i>	IN-AN-03, 05, 19
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>	IN-AN-03, 05, 19
Nicobar Parakeet	<i>Psittacula caniceps</i>	IN-AN-05
Andaman Hawk-owl	<i>Ninox affinis</i>	IN-AN-03, 05, 19
Nicobar Bulbul	<i>Hypsipetes nicobariensis</i>	IN-AN-19
White-headed Starling	<i>Sturnus erythropygius</i>	IN-AN-03, 05, 19

is considered Near Threatened, according to BirdLife International (2001, 2014). It is mainly found in the Middle and South Andamans (Vijayan 1997). It was reported to be common in Mount Harriet National Park. According to Rauf Ali (*pers. comm.* 2003), it is quite common near Wandoor. H. Andrews (*pers. comm.* 2003) also considers it to be one of the most common bird species. It is found from South to North Andamans, including several outlying islands right up to Landfall, the northernmost island in the Andamans. Earlier it was considered Data Deficient (2001), but from 2004 to 2007, Ezhilarasi (2009) conducted extensive research on this species. She did not find it on islands having an area below 1 sq. km. Its number increased with increasing island size. It has been reported from 13 IBA sites such as Landfall Island, Austin Strait, Chainpur and Hanspuri, Interview, Saddle Peak NP, Jarawa Reserve (Middle Andaman), Mahatma Gandhi Marine NP, Mount Harriet NP, Soal Bay, North Sentinel Island Wildlife Sanctuary, South Sentinel Island WLS and many other islands that are not IBAs [see Rahmani (2012) for more IBA names].

Andaman Serpent-eagle *Spilornis elgini* Near Threatened

The Andaman Serpent-eagle is one of the 81 Near Threatened species in India (IUCN 2014). It is endemic to the South Andaman Islands where it is common and can be seen easily in inland forest clearings, near hills (BirdLife International 2001), and mostly in the mangrove marshes

and mangrove creeks where it nests (H. Andrews, *pers. comm.* 2003). Recently, it was reported from the Middle Andaman and even on a small island like South Reef (H. Andrews *pers. comm.* 2003). Naoroji (2007) has shown its occurrence in all the islands of the Andamans group, more common in North and Middle Andaman, infrequent in Little Andaman, and absent in Narcondam Island. The main threat is the rapidly rising human population; the bird habitat is consequently under great pressure from agriculture, grazing, and logging.

South Nicobar Serpent-eagle *Spilornis klossi* Near Threatened

This was earlier considered as a subspecies of Crested Serpent-eagle *Spilornis cheela*, but now it is recognized as a full species, *Spilornis klossi*, distinct from Andaman Serpent-eagle *S. elgini* that is found in the Andaman group of islands. It is also called Great Nicobar Serpent-eagle. It is endemic to Great Nicobar, Little Nicobar and Menchal Islands (Sankaran 1998). It is among the least known of Indian raptors (Naoroji 2007), but recent sightings by scientists of SACON found it to be relatively common. It may be common, but it has limited distribution of nearly 860 sq. km of forests which are largely intact.

Beach Thick-knee *Esacus giganteus* Near Threatened

Its taxonomy is very complicated (see Rahmani 2012). It is a widely distributed species from the Andaman Islands to



Long-tailed Macaque *Macaca fascicularis*, also called Crab-eating Macaque, is common in Southeast Asia. The subspecies *M. fascicularis umbrosa* is found in Great Nicobar, Little Nicobar, and Katchal Islands

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Myanmar, Thailand, Malaysia up to Solomon Island, Vanuatu, New Caledonia and Australia (del Hoyo et al. 1996, BirdLife International 2014). It is found on the undisturbed beaches of almost all islands of the Andaman and Nicobar groups. It has almost disappeared from the tourist beaches such as the Havelock group in Rani Jhansi Marine National Park.

Andaman Wood-pigeon *Columba palumboides*
Near Threatened

This is one of the Near Threatened species endemic to the Andaman and Nicobar Islands. It is uncommon in the Andamans, but small parties wander from one island to another. It is potentially threatened by extensive hunting and trapping by locals, and habitat loss and fragmentation because of the growing human population on the larger islands, resulting in pressure from agriculture and grazing (Stattersfield *et al.* 1998; H. Andrews, *pers. comm.* 2003). It has been reported from Mount Diavalo-Cuthbert Bay, Mahatma Gandhi Marine NP, Mount Harriet, Interview Island WLS, Car Nicobar, Chainpur and Hanspuri, Great Nicobar, Little Nicobar, Little Andaman, and other IBA sites.

Andaman Cuckoo-dove *Macropygia rufipennis*
Near Threatened

This is one of the Near Threatened species endemic to Andaman and Nicobar (Nancowry subgroup and Great

Nicobar) archipelagoes. The Andaman Cuckoo-dove is found in dense, broadleaf, primary and secondary evergreen forest. It is reported from Mount Diavalo-Cuthbert Bay, Mahatma Gandhi Marine NP (Wandoor NP), Interview Island Wildlife Sanctuary, Car Nicobar, Chainpur and Hanspuri, Great Nicobar, Little Nicobar, Little Andaman, and other IBA sites.

Andaman Coucal *Centropus andamanensis*
Restricted Range

The Andaman Coucal or Brown Coucal is endemic to these islands and is found in forest-edge gardens, cultivation, and mangrove areas. It is mainly reported from the Table and Coco Islands, Middle Andaman, South Andaman, and Little Andaman (Stattersfield *et al.* 1998). It is also reported from Mount Diavalo-Cuthbert Bay, Mahatma Gandhi Marine NP, Landfall Island Wildlife Sanctuary, Little Andaman, Baratang-Rafters Creek, Mount Harriet NP, North and South Sentinel, North Reef Island WLS and other IBA sites.

Andaman Scops-owl *Otus balli*
Near Threatened

This is a Near Threatened species endemic to the Andaman Islands, where it is common and can be seen in trees in semi-open or cultivated areas and around human settlements (del Hoyo *et al.* 1999). Very few studies have

been conducted on the species and its present status is unclear. Though commonly seen, more research is required to know about the bird's ecological requirements, population size and trends (Stattersfield *et al.* 1998). This scops-owl has been reported mainly from Narcondam, North Andamans, Middle Andamans, South Andamans, Baratang Island, and several outlying islands. Some of the IBA sites from where it is reported are Little Andaman, Interview Island Wildlife Sanctuary, Saddle Peak National Park, Baratang-Rafters Creek, Mount Harriet NP-Shoal Bay, Narcondam Island WLS, North and South Sentinel, Jarawa Reserve, Mahatma Gandhi Marine NP, and Rani Jhansi Marine NP.

Andaman Hawk-owl *Ninox affinis*

Near Threatened

This Near Threatened species is endemic to the Andaman and Nicobar archipelagos, where it occurs in mangrove forest, lightly-wooded areas and forest clearings, and is commonly seen hawking insects at dusk (BirdLife International 2001). Its population is also reducing due to habitat degradation owing to the growing human population on the larger islands in the Andamans. It is found in North, Middle, and South Andaman Islands, and is reported from some IBAs such as Rani Jhansi Marine National Park, Tillanchong, Camorta, Katchal, Nancowry, Trinket, Saddle Peak National Park, Jarawa Reserve, Kadakachang, Austin Strait, Mount Diavalo-Cuthbert Bay, Mahatma Gandhi Marine NP, and others.

Nicobar Bulbul *Hypsipetes nicobariensis*

Near Threatened

This bulbul is one of the Near Threatened species with a small, declining population as a result of the clearance and degradation of forests for plantation, agriculture, and infrastructure projects (BirdLife International 2001). This bird is endemic to the Nancowry group of islands in the Nicobar Islands (Abdulali 1965). It was reported by Humayun Abdulali that there were up to 100 in Tillanchong, but in studies by Sankaran (1998), only one was seen on Tillanchong and one on Nancowry. It shows a sharp decline, but it is suspected that a healthy population could be seen on Teresa and Katchall islands.

Nicobar Pigeon *Caloenas nicobarica*

Near Threatened

This pigeon occurs on the Andaman & Nicobar Islands and is also recorded from Myanmar, Thailand, Malaysia, Vietnam, Indonesia, Philippines, Papua New Guinea, Solomon Islands, and Palau (with endemic race *pelewensis*) in the Caroline Islands in USA (Ali & Ripley 1987, del Hoyo *et al.* 1997, BirdLife International 2001). It breeds, often in dense colonies, on normally extremely small wooded offshore islands, and forages *in situ* or (at least at times) on adjacent

mainland (or larger island) areas. Relentless trapping for food, the pet trade, and perhaps still their (certainly once-prized) gizzard-stones seriously suppress populations, as does clearance of small islands for plantations and almost certainly, the colonization of such islands by rats, cats, and other alien predators (Stattersfield *et al.* 1998). It is found in North, Middle, and South Andaman, Little Andaman, and Car Nicobar, and the Nancowry and Great Nicobar groups of islands.

Nicobar Parakeet *Psittacula caniceps*

Near Threatened

This parakeet is endemic to the Nicobar archipelago, where it inhabits tall forest on Great Nicobar, Little Nicobar, Menchal, Kamorta, and Kondul Islands, feeding in small groups in the canopy on the fruit of *Pandanus* palms (Grimmett *et al.* 1998). It is apparently common in the interior of the forest. Unlike popular belief, it not trapped in large numbers for trade but only for local consumption. Its small distribution range is under increasing human pressure.

Long-tailed Parakeet *Psittacula longicaudata*

Near Threatened

The Long-tailed Parakeet has a wide distribution from the Andaman & Nicobar Islands to Coco Islands in Myanmar, peninsular Thailand, Sabah, Sarawak, and peninsular Malaysia, Singapore, Kalimantan, Indonesia, and Brunei. Owing to deforestation and trapping, it is under pressure, therefore BirdLife International (2001, 2014) considers it Near Threatened.

Nicobar Scops-owl *Otus alius*

Data Deficient

The Nicobar Scops-owl is known only from a single locality on Campbell Bay (Rasmussen 1998). It may occur on other islands in the group, but equally it may be endemic to Great Nicobar, and indeed restricted in range on that island. The most likely other island where it may be found is Little Nicobar which, like Great Nicobar, is relatively poorly explored (Rasmussen 1998).

Andaman Woodpecker *Dryocopus hodgesi*

Near Threatened

This woodpecker is endemic to the Andaman Islands, where it is a common resident in large trees in evergreen forest (Davidar *et al.* 1996, Grimmett *et al.* 1998). Although forest remains fairly extensive on the Andamans, the human population on larger islands is rising rapidly and the habitat is consequently under severe pressure from agriculture, grazing, and logging (Pande *et al.* 1991, Stattersfield *et al.* 1998). It is found in many IBAs such as Chainpur and Hanspuri, Austen Strait, Interview Island Wildlife Sanctuary, Saddle Peak National Park, Baratang-Rafters



ASAD R. RAHMANI

In Andaman & Nicobar, traditional hunting is allowed under the Indian Wildlife (Protection) Act, 1972, but it is no longer traditional as modern firearms are now used for killing all types of birds



MANISH CHANDI



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Nicobar Tree Shrew *Tupaia nicobarica* is endemic to Nicobar Islands, with two subspecies: *Tupaia nicobarica nicobarica* (Great Nicobar) and *Tupaia nicobarica surda* (Little Nicobar)

Creek, Rani Jhansi Marine NP, Jarawa Reserve, and Mahatma Gandhi Marine NP (Rahmani 2012).

Andaman Drongo *Dicrurus andamanensis*
Near Threatened

This drongo is endemic to the Andaman archipelago, but is also recorded from Coco Island in Myanmar, where it is a common resident of forests (Davidar *et al.* 1996, Grimmett *et al.* 1998). Although its range is very small, forested habitat was relatively intact on the Andamans. However, there are signs that pressure on forests is increasing in the Andamans through increasing human population and consequent conversion of habitat to cultivation, grazing, increased logging, and development (Pande *et al.* 1991, Stattersfield *et al.* 1998, BirdLife International 2001).

Andaman Treepie *Dendrocitta bayleyi*
Near Threatened

This treepie is endemic to the Andaman archipelago, where it is usually found in pairs or parties of up to 20 birds, or in mixed flocks in tall trees in dense broadleaf evergreen forest (Grimmett *et al.* 1998). It is uncommon (Davidar *et al.* 1996) to locally fairly common (Grimmett *et al.* 1998), and

although habitat on the Andamans remains relatively intact, there are indications that an increase in human population and habitat loss is occurring in the archipelago, suggesting that the very small range of this species might rapidly shrink and fragment (Pande *et al.* 1991, Stattersfield *et al.* 1998, BirdLife International 2001). It is found in many IBAs of the Andaman group of islands, such as Chainpur and Hanspuri, Austen Strait, Interview Island Wildlife Sanctuary, Saddle Peak National Park, Baratang-Rafters Creek, Rani Jhansi Marine NP, Jarawa Reserve, and Mahatma Gandhi Marine NP (Rahmani 2012).

SOME NEW BIRD RECORDS FROM ANDAMAN & NICOBAR ISLANDS

Lesser Frigatebird *Fregata ariel*

Sivakumar & Sankaran (2002) carried out studies on Great Nicobar Island during which they sighted Lesser Frigatebird. The bird was seen on many occasions.

Large Hawk Cuckoo *Hierococcyx sparveroides*

Sivakumar & Sankaran (2002) observed this bird 18 times during their survey period between 1995 and 1998 on Great Nicobar Island.

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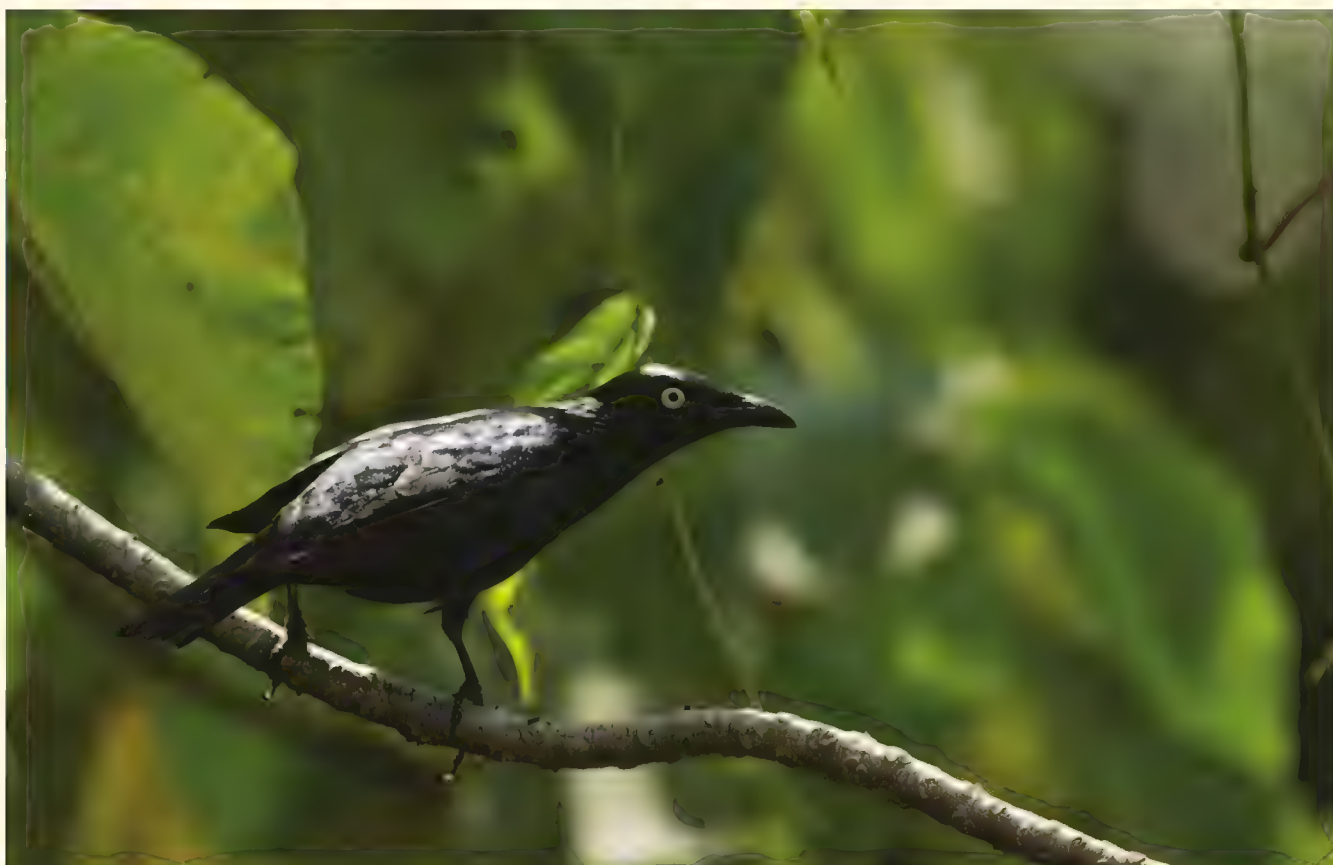
Crimson Sunbird (top) Olive-backed-Sunbird (bottom)

Thanks to long isolation from the mainland, many species of birds found in Andaman & Nicobar show variation at species, subspecies, or race level. For instance, the Crimson Sunbird *Aethopyga siparaja* of the mainland occurs as subspecies *nicobarica* in Nicobar which is smaller, male with purple cap, rump and tail, and no streamer in the tail.

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Olive-backed Sunbird *Cynnyris jugularis* show racial variation in Nicobars, and within different islands in Nicobar



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Asian Glossy Starling *Alponis panayensis*, found in northeast India and Southeast Asia shows interesting subspecies variations in different islands. In Andaman and Car Nicobar, the subspecies *tyleri* is less glossy, with a much bluer cast, narrower, much more distinct neck-hackles, and dark brown eyes. In Nicobar, subspecies *albiris* has white irides (above)



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Similar subspecies variation is found in the Greater Racket-tailed Drongo *Dicrurus paradiseus*. *D. paradiseus nicobarica* (above) that occurs in the Nicobars is smaller with less hackles, and a larger, more distinct frontal crest. These morphological variations further prove that we have to protect IBAs in the whole range of a species to save all subspecies and even races

SHASHANK DALVI



IN-AN

Although Hooded Pitta *Pitta sordida* is not a threatened species and widespread in north-east India and Southeast Asia, the subspecies found in the Nicobar islands, *P. s. abbotti* shows distinct differences from the nominate species found in the Northeast. It is darker and more olive overall, with a darker crown, pale blue shoulder and rump, bluer central underparts, and a much smaller wing-patch (Rasmussen & Anderton 2012)

White-faced Plover *Charadrius dealbatus*

This bird breeds in the south coast of China, including Hainan, and winters from southern Vietnam through the Gulf of Thailand, west coast of Malay Peninsula to Singapore and east coast of Sumatra and Indonesia. Bhopale (2010) spotted one unusual plover in the North Andamans. A picture was taken and it was later identified as White-faced Plover, which was earlier considered a subspecies of Kentish Plover *Charadrius alexandrinus*.

Mugimaki Flycatcher *Ficedula mugimaki*

This is an east Asian species that winters widely in Southeast Asia. Das (2014) sighted an unusual flycatcher in Neil Island and photographed it. It was later confirmed to be Mugimaki Flycatcher. This is considered as the first record for South Asia.

THREATS AND CONSERVATION ISSUES

On the Andaman & Nicobar Islands, the human population registered a growth rate of 27% as against the national average of 21% during the decade 1991–2001. This is mainly due to settlers, sometimes with the encouragement of the Government of India, coming from

the mainland. This rapid growth in human population has adversely affected the natural ecosystems of the islands. Expansion of agriculture and grazing that leads to habitat loss, and degradation from logging are some of the key threats to the birds and their habitats (Curson 1989, Andrews & Sankaran 2002). Introduced or invasive species also pose a threat to the native birds, for example, goats used to disturb the habitat of the endemic Narcondam Hornbill (Vijayan & Sankaran 2000), while Spotted Deer and Asiatic Elephant adversely affect forest regeneration and cause serious crop losses (Aul & Ali 2001, Aul 2002a). Infrastructure development such as road construction, expanding urban and rural areas, modern agricultural practices, and poaching are some of the factors posing serious threats to the avifauna of these islands.

It is essential to eliminate invasive species at the earliest to prevent further degradation of the forests. The protected area (PA) network in the Andaman & Nicobar Islands needs to be reassessed, as several small PAs were created without proper justification. They should be clumped with adjoining larger PAs. The PA network in the marine ecosystem, at present inadequate, needs expansion by declaring marine sanctuaries. Any infrastructure development can be allowed only after carrying out EIA studies by reputed organizations/

individuals. Poaching by settlers and foreigners needs to be controlled by strengthening the Forest Department, in collaboration with other departments such as the Coast Guard and the Indian Navy. A conservation awareness programme is also required for local people, especially settlers. A monitoring protocol needs to be prepared for insular birds and all endemic birds should be monitored regularly. There should be strict control on the introduction of non-native species.

The island ecosystem of Andaman & Nicobar is under threat due to one or more of the following reasons: Encroachment on forestland, mining of sand, inappropriate fisheries, inappropriate and excessive forest operations, introduction of exotics, extraction of corals, poaching for corals, impact of agriculture and human habitation.

Encroachment: The forested land is a source of useful forest produce that sustains many livelihood patterns. Villagers know this and are aware of the effects of deforestation. In spite of this, encroachment in forest area continues without much control as there is a great demand for living space. New Wandoor (Protected forest I & II) has the largest number of forest encroachments. Being widespread and uncontrolled, this constitutes a serious threat to the forests of the Andaman Islands.

Coastal erosion due to sand mining: Two of the major threats to marine and coastal biodiversity include sand mining on the sandy beaches and siltation of coastal areas. Increasing population and accelerated development have spurred the growth of construction activity. The cement used for construction requires sand to be mixed with it to make concrete and as the islands do not have large streams from which the sand can be collected, most of the sand is mined from the coastal areas. To facilitate sand extraction from beaches, a temporary Coastal Regulation Zone (CRZ) waiver has been authorized by the Central Ministry for Environment, Forests, and Climate Change. A Sand Allocation Committee has also been established in the Andaman & Nicobar Islands, but surveillance and enforcement are difficult, and there is extensive illicit collection, leading to rampant erosion.

Impacts due to forestry operation: Historically, a number of forest management plans were formulated starting from 1906. Private companies were also given permission to have their own felling coupes. The Forest Department follows the Andaman Canopy Lifting Shelterwood System for regenerating worked forests. However, this system has led to the depletion of forests and biodiversity. A major impetus for extensive forestry operations and promoting commercial species has been the imperative to supply raw material to wood-based industries.

Impacts due to tourism: Tourist activities in the islands have also led to serious threats to the environment. For one, the infrastructure required to service the growing number

of tourists, especially airports, hotels, and roads. Besides, increase in the number of tourists means an increase in energy consumption and pollution because of transport and inadequate waste management.

Introduction of alien species: The introduction of alien or exotic species has had adverse impacts through their unchecked proliferation, for example Spotted Deer, which were originally introduced for sport. In the absence of natural predators, they multiplied extensively. The deer have now become pests as they browse indiscriminately and prevent regeneration in the protected areas. Abandoned after forest operations, feral elephants are also causing damage in some PAs. The introduction of hardy and adaptable birds like Common Mynah is a threat since they compete with more vulnerable indigenous species for sustenance.

Hunting: Hunting is a serious and common threat. It is mostly observed in Camorta and other islands of the Nancowry group, as well as Great Nicobar and Car Nicobar. Pied and Green Imperial-pigeons are favourite table birds (Pande et al. 2007). Nicobar Megapode is also under tremendous pressure from hunting (Rahmani 2012). Easy availability of airguns and cartridges has changed hunting technique, and traditional hunting which could have been sustainable is no longer practiced. Every type of bird is now hunted, even small birds such as Nicobar Bulbul (Rahmani 2012).

Impact of tsunami: The earthquake of December 26, 2004 and resultant tsunami had unprecedented consequences for the Andaman & Nicobar Islands, particularly the latter. Some of the islands tilted and due to ingress of sea water, huge tracts of coastal forests were destroyed. However, the greatest damage was done to coastal ecosystems. In many places, post-tsunami rehabilitation did more ecological harm than the tsunami itself.

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AUSTIN STRAIT

IBA Site Name	: IN-AN-01	Altitude	: 0–50 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,000 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 55' 00" N, 92° 52' 00" E	Habitats	: Tropical Evergreen and Semi-evergreen
Ownership	: State		Forest, Mangrove Forest, Creeks,
Area	: Not Available		Intertidal mudflats and wetlands

IN-AN-01

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Contains notified Reserve Forests & ICRZ-1 under Island Coastal Regulation Zone, 2011 notified.



GENERAL DESCRIPTION

Austin Strait is located to the north of Mayabundar, up to Mohanpur. It has extensive creeks, fringed with dense, luxuriant growth of mangroves. The site extends along the Strait, dividing North Andaman from Middle Andaman. The habitat is fairly undisturbed (Gandhi 2000), and is important for its rich mangrove stands, which support a variety of typical mangrove fauna (Andrews & Sankaran 2002).

Climatic conditions are hot, humid, and uniform. The islands receive rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

The IBA was basically a mangrove area, dominated by *Rhizophora apiculata*, *Bruguiera gymnorrhiza*, *B. parviflora*, *Rhizophora mucronata*, and *R. conjugata*. After the tsunami earthquake during December 2004, the habitat changed considerably. During this mega tectonic event, the land here rose by almost one meter above mean sea level. This change in water level damaged most of the mangrove patches close to the land. As a process of succession, now these dry patches are getting green with terrestrial species.

AVIFAUNA

Overall 12 restricted-range bird species identified by BirdLife International from the Endemic Bird Area



Andaman Serpent-eagle *Spilornis elgini* is one of the endemic raptors of Andaman Islands

of Andaman Islands (Stattersfield *et al.* 1998) have been recorded till now from this IBA. An extensive bird survey carried out across 52 outer and five major islands (North, Middle, and South Andaman, Rutland, and Little Andaman) during 2003–2004 (Vijayan *et al.* 2005), a total of 19 endemic species, including the recently accepted seven endemic species (earlier they were considered as subspecies) such as Andaman Teal *Anas albogularis*, Andaman Green-pigeon *Treron chloropterus*, Andaman Nightjar *Caprimulgus andamanicus*, Andaman Cuckoo-shrike *Coracina dobsoni*, Andaman Bulbul *Pycnonotus fuscoflavescens*, Andaman Shama *Copsychus albiventris*, and Andaman Flowerpecker *Dicaeum virescens* were found from this IBA (Rajamamannan 2011). Most of them are quite common in suitable habitats.

The Andaman Crane *Rallina canningi* reported from this IBA, earlier listed as Data Deficient by BirdLife International (2001), is now classified as Near Threatened (BirdLife International 2014). *Anas gibberifrons albogularis* has been split into two species: Sunda Teal *Anas gibberifrons*, which is classified as Near Threatened, and Andaman Teal *Anas albogularis* now classified as Vulnerable. The Andaman Teal has been reported from this IBA earlier by Vijayan & Sankaran (2000). It has a small population of ≤1000 with a recently estimated population of around 674

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>icurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
Andaman Scops-owl	<i>Otus balli</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scop-owl	<i>Otus balli</i>

RECENTLY ADDED ENDEMIC SPECIES, ACCORDING TO RASMUSSEN & ANDERTON (2003, 2012)

Andaman Teal	<i>Anas albogularis</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Nightjar	<i>Caprimulgus andamanicus</i>
Andaman Cuckoo-shrike	<i>Coracina dobsoni</i>
Andaman Bulbul	<i>Pycnonotus fuscoflavescens</i>
Andaman Shama	<i>Copsychus albiventris</i>
Andaman Flowerpecker	<i>Dicaeum virescens</i>

individuals by Vijayan *et al.* (2006). There was some impact on the mangroves due to a mega earthquake in 2004 and the resultant tsunami, specially on the mangroves along the west coast, due to the upliftment of the landmass between 1–2 m. The post-tsunami survey of Andaman Teal in selected coastal wetlands was carried out to find the conservation action necessary for this species' survival (Rajamamannan & Vijayan, *in preparation*).

OTHER KEY FAUNA

The habitat is relatively undisturbed and supports a variety of typical mangrove fauna such as Estuarine Crocodile *Crocodylus porosus* and the typical snakes, crabs, prawns, and fishes of this area. Detailed surveys of mangroves of Bay Island and its fauna have been carried out by BSI, ZSI, and CARI in recent years (Dagar *et al.* 1991). Sometimes Andaman Cobra *Naja sagittifera* is seen

in the creek.

LAND USE

- Nature conservation and research
- Tourism and recreation
- Settlements

THREATS AND CONSERVATION ISSUES

- Illegal logging
- Hunting including poaching of crocodiles
- Encroachments
- Natural upheavals such as tropical cyclones, earthquake, and tsunamis

The site deserves special conservation attention for its mangrove diversity and associated fauna. Local people collect crabs, fish, and honey for their own consumption as well as for sale (Gandhi 2000). Bird hunting is believed to be one of the most common problems here. Young people were seen in groups with air guns, hunting in the forests close to the mangroves (S. Manchi, *pers. comm.* 2014). Therefore legal protection to these areas is very necessary.

Rodgers & Panwar (1988) have recommended the declaration of a mangrove sanctuary from Austin to Kishorinagar.

There are some more subspecies of birds in Austin Strait that are of conservation value, especially if they are upgraded to species level in the future.

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SHASHANK DALVI

Andaman Scops Owl *Otus balli* is confined to the Andaman Islands

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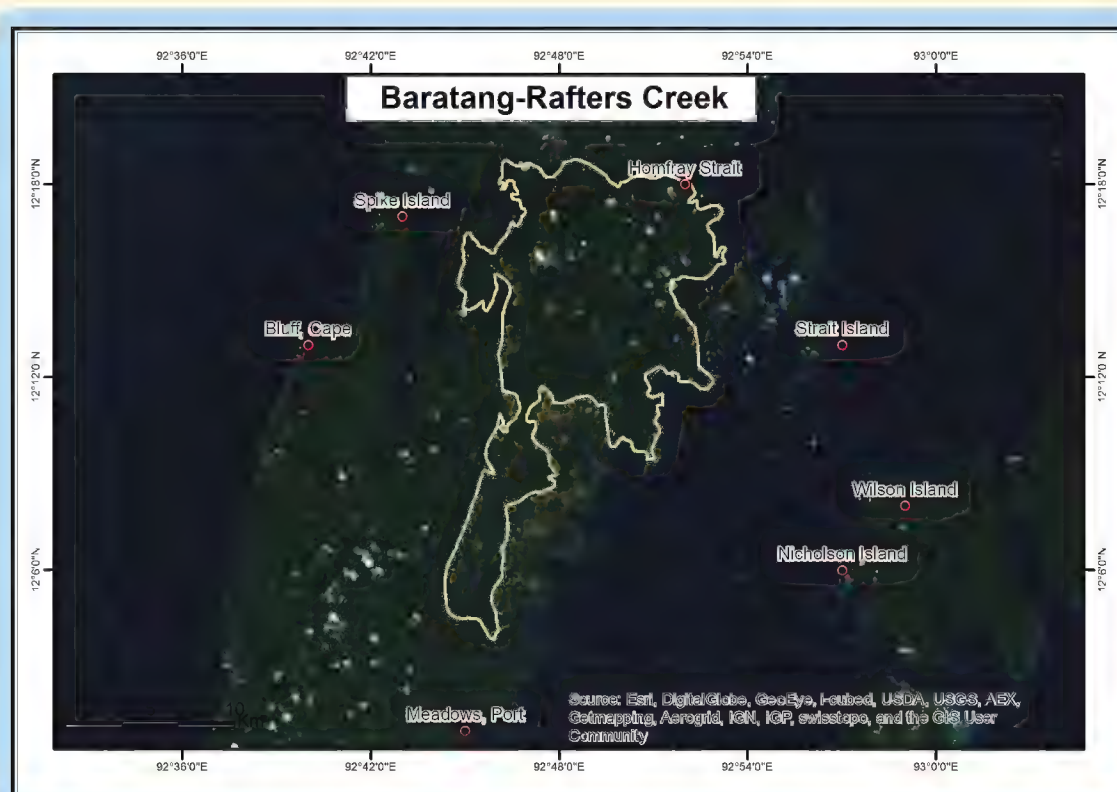
BARATANG-RAFTERS CREEK

IN-AN-02

IBA Site Name	: IN-AN-02	Altitude	: 0–70 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,000 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 15' 00" N, 92° 45' 00" E	Habitats	: Tropical Semi-evergreen,
Ownership	: State		Moist Deciduous, and Littoral
Area	: Not Available		Forest; Teak Plantations

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Reserve Forests & ICRZ-1.



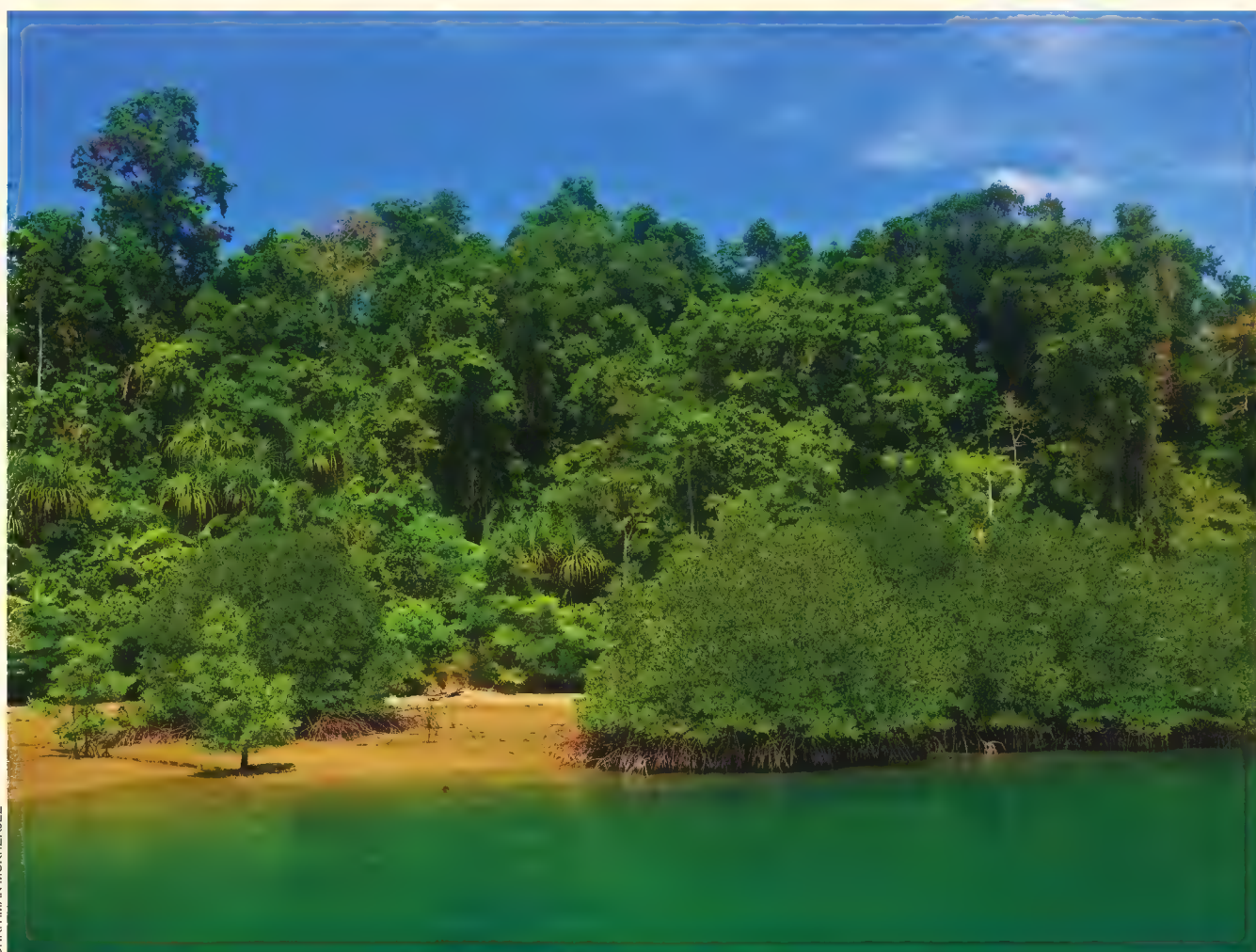
GENERAL DESCRIPTION

Baratang-Rafters Creek is located in the Andaman Islands in the Bay of Bengal. The habitat types of this IBA include Tropical Evergreen, Semi-evergreen, and Mangrove forests. The island experiences humid, tropical coastal climate. Rainfall is received from both the southwest and northeast monsoons. The area has extensive limestone formations with a widespread network of caves.

Baratang Island lies between the Middle and South Andaman Islands. Baratang has been selectively logged and some areas clearfelled for human settlements and for raising Teak plantations since the early 20th century (Yoganand & Davidar 2000). Based on the classification of Champion

& Seth (1968), the forest types of the site are: Evergreen forest of *Dipterocarpus*, *Canarium manii*, *Artocarpus*, and *Pometia pinnata*; Semi-evergreen forest confined to valleys and slopes containing both semi-evergreen and deciduous trees; Deciduous forest of lower canopy height growing on the hills and in drier areas (Yoganand & Davidar 2000). The island is fringed with mangroves, some growing to tree form. Despite the removal of commercially exploitable trees in the past, the birdlife is more or less intact. However, commercial logging has been stopped since 2002 and the forests are now being selectively logged to meet the local demand from the old logged areas, while there is no logging in the high/untouched forests.

DHIRTIMAN MUKHERJEE



Baratang Island is fringed with mangroves, some growing to tree form.
The island is covered with evergreen, semi-evergreen, and deciduous forest

AVIFAUNA

The birdlife of this IBA appears to be very rich. All the restricted-range species of the Andaman Islands (except for the Narcondam Hornbill *Aceros narcondami*) are reported from this site. Among the globally Threatened species, Andaman Crake *Rallina canningi* is present. Not much is known about this bird and it is probably not as rare as is generally believed (Vijayan & Sankaran 2000). Further surveys of this species are required in Baratang-Rafters and in other suitable areas.

The Andaman Teal *Anas gibberifrons albogularis* which inhabits the IBA was not listed in the Red List by BirdLife International (2001) as it was considered a subspecies of Grey Teal *Anas gibberifrons* which is widely distributed in Southeast Asia, Australia, New Zealand, and many islands (del Hoyo *et al.* 1992). Rasmussen & Anderton (2005, 2012) and del Hoyo & Collar (2014) have elevated the Andaman Teal to species level as *Anas albogularis*. Therefore, the Andaman Teal would be one of the rarest ducks in the world. Vijayan *et al.* (2006) have estimated that not more than 1,000 individuals remain in the world and their total population is likely to be c. 674 individuals.

Like the Andaman Teal, there are many other subspecies of birds that are restricted to the Andaman & Nicobar Islands. Some species are represented on different islands by different subspecies. Many subspecies have been upgraded to full species, such as Andaman Green-pigeon *Treron chloropterus*. Earlier, it was treated as a subspecies of Pompadour Green-pigeon *Treron pompadora*. Therefore, we have included it in the restricted-range species, as described by Stattersfield *et al.* (1998).

However, the locally threatened Indian Swiftlet *Aerodramus fuciphagus* is a key avian species of the area, inhabiting the limestone caves which provide it with an ideal place for breeding. The area is afforded protection by the Forest Department by engaging local settlers to guard the caves during the swiftlet's breeding season. Its numbers, which declined in the past, have since been showing an increase due to these protection measures. There was a proposal to accord this area the status of a wildlife sanctuary in honour of the late Dr. Ravi Sankaran, who studied these birds in the mid 1990s and was responsible for their conservation through peoples' participation and ex-situ breeding. Unfortunately, the proposal was subsequently dropped.

VULNERABLE

Andaman Teal	<i>Anas gibberifrons albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgii</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Teal	<i>Anas albogularis</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgii</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

OTHER KEY FAUNA

There is very little literature on the flora and fauna of this site. Saltwater Crocodile *Crocodylus porosus* is still common in the creeks and rivulets. Wild Pig *Sus scrofa andamanensis*, and the Water Monitor Lizard *Varanus salvator andamanensis* are the main native terrestrial animals. Among the smaller creatures, lizards such as the Bay Island Forest Lizard *Coryphophylax subcristatus*, Short-tailed Forest lizard *Coryphophylax brevicaudus*, and Andaman Litter Skink *Eutropis andamanensis* are common on the forest floor. The common snakes include Green Bronze-back *Dendrelaphis andamanensis* and Andaman Water-snake *Xenochrophis tytleri*. The mangroves of Baratang also harbour an abundance of Dog-faced Water-snake *Cerberus rynchops*, while other mangrove species such as Yellow-banded Mangrove-snake *Cantorina violacea* are occasionally encountered.

LAND USE

- Nature conservation and research
- Tourism and recreation
- Settlements

THREATS AND CONSERVATION ISSUES

- Poaching
- Habitat destruction
- Encroachments
- Increasing tourism

Baratang-Rafters Creek is one of the excellent habitats for Andaman's insular avifauna, but it is being disturbed by modern agriculture and human settlements. Providing higher levels of protection will help in conserving them better.

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CAR NICOBAR

IBA Site Name	: IN-AN-03	Rainfall	: 3,000 mm
Administrative Region	: Andaman & Nicobar Islands	Temperature	: 20 °C to 32 °C
(Union Territory)		Biogeographic Zone	: 12B Islands: Nicobars
District	: Nicobar	Habitats	: Tropical Evergreen Forest,
Coordinates	: 09° 11' 60" N, 92° 46' 00" E		Semi-evergreen Forest,
Ownership	: State		Mangrove, Coastal Lagoons,
Area	: 127 sq. km		Coconut Plantations, Grasslands,
Altitude	: 0–60 m		Beaches

IN-AN-03

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 126: Nicobar Islands)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

The Nicobar group comprises 23 islands covering an area of 1,841 sq. km. Of these, only 12 are inhabited. The Nicobar group of islands can be divided into three, the Great Nicobar, the Nancowry subgroup and the Car Nicobar subgroup (Sankaran 1998). They are separated by from the Andaman group by the Ten Degree Channel.

Car Nicobar, along with Batti Malv, is part of the northernmost subgroup of the Nicobar Islands, about 88 km north of the Nancowry subgroup. While Car Nicobar is inhabited, Batti Malv is not. The human population of Car Nicobar is over 19,000, of which more than 80% are tribals. Car Nicobar is an island with heavy pressure from

population and habitat modification. Small patches of highly fragmented mixed forest are all that is left in this island. Dominant habitats include coconut, areca plantations, scrub, home gardens, grasslands, and tsunami inundated wetlands

Proximity to the equator and the sea ensures a hot, humid, and uniform climate. The Nicobar Islands receive rainfall from both the southwest and the northeast monsoons. The maximum precipitation is between May and December, the driest period between January and April (Sankaran 1995).

The forest type of the Nicobar Islands can be classified as tropical evergreen, with inland areas being forested,



Natural vegetation of Car Nicobar Island has been largely replaced by coconut plantations

or grasslands, and a significant proportion of the coast being mangroves. In the Car Nicobar subgroup, Batti Malv is forested, while most of Car Nicobar bears coconut plantations in the coastal strip, the central part of the island having patches of forests, with a small area under grassland (Sankaran 1998).

There is concern that marine life in Nicobar Islands could take centuries to recover after being devastated by the tsunami. The tsunami tidal waves have transported large volumes of sea water into inland waterbodies and have also created large tidal pools of sea water. Sea water percolates into coastal freshwater aquifers and salinizes them (Ramachandran *et al.* 2005).

AVIFAUNA

One globally Threatened species, which is also a restricted-range species, Nicobar Sparrowhawk *Accipiter butleri* and one Near Threatened species, Great Nicobar Serpent-eagle *Spilornis klossi*, have been reported from this IBA site. Other restricted-range species include Andaman Wood-pigeon *Columba palumboides*, Andaman Cuckoo-dove *Macropygia rufipennis*, Andaman Hawk-owl *Ninox affinis*, and Andaman White-headed Starling *Sturnia erythropgia*.

The Nicobar Imperial-pigeon *Ducula nicobarica* was earlier considered a subspecies of Green Imperial-pigeon *Ducula aenea nicobarica*, and Ali & Ripley (1987) called it “race peculiar to the Nicobar group of islands south of

the Ten Degree Channel”. Rasmussen & Anderton (2005, 2012) have recognized *Ducula nicobarica* as a full-fledged species, so it has to be added to the list of restricted-range (endemic) species of Andaman & Nicobar Islands prepared by Stattersfield *et al.* (1998). It was historically very common and on some islands “simply swarming” (Butler 1899–1900), but has suffered a severe decline in numbers due to hunting by airguns on Car Nicobar (Sankaran 1998). However, on Tillanchong, they were abundant.

Another notable species here is the Brown Hawk-owl *Ninox scutulata*, of which we have four subspecies in mainland India, and *Ninox affinis* of which we have two subspecies: *N. a. affinis* (Andaman Brown Hawk-owl) and *N. a. isolata* (Nicobar Brown Hawk-owl) (Ali & Ripley 1987). Grimmett *et al.* (1998) recognize two subspecies of *Ninox scutulata*: *N. s. lugubris* of mainland India, and *N. s. obscura* of Andaman & Nicobar Islands. Rasmussen & Anderton (2005, 2012) have upgraded *Ninox obscura* to species level, (Ali & Ripley (1987) have called it Hume’s Brown Hawk-owl *Ninox scutulata obscura*. Therefore, one more species has to be added to the restricted-range list of the Andaman Islands EBA prepared by Stattersfield *et al.* (1998).

BirdLife International (2001) listed Nicobar Pigeon *Caloenas nicobarica* as Near Threatened, as “relentless trapping for food, the pet trade and perhaps still their (certainly once-prized) gizzard stones seriously suppresses populations, as does clearance of small islands for plantations,



S HARIKRISHNAN

Nicobar Pit Viper *Trimeresurus labialis* is found only on the Nicobar Islands. There is just one unconfirmed record from Andamans

and, almost certainly, the colonization of such islands by rats, cats and other alien predators". Sankaran (1998) found that this species still nests in very large numbers on Batti Malv. Latest information is not available.

The Andaman Red-whiskered Bulbul *Pycnonotus jocosus whistleri*, endemic to the Andaman Islands, was introduced by the British in the late 1800s to Camorta Islands, but now it is also found on Car Nicobar (Sankaran 1998), apparently introduced by the Nicobarese from Camorta. Recent introduction of Common Crow to the island and their increasing numbers may have a negative impact on the local birds.

OTHER KEY FAUNA

There are very few mammals on Car Nicobar. Wild Pig *Sus scrofa* was introduced long ago. The Nicobar Flying Fox *Pteropus faunulus*, is totally endemic to the Nicobar Islands, and Car Nicobar is one of its type localities (Bates & Harrison 1997). Another species of special concern to India is Blyth's Flying Fox *Pteropus melanotus melanotus* which is a relatively abundant species (Bates & Harrison 1997), but the status of the subspecies needs reassessment. The Green Sea Turtle *Chelonia mydas*, dolphins and Dugong *Dugong dugon* are found in the surrounding seas. The aquatic life is too rich to be described in this short account.

Car Nicobar Pit Viper *Trimeresurus labialis*, an endemic snake, is reported only from Car Nicobar Island. It was considered to be the same species as is found in the Nancowry group, but recent taxonomic work has restricted it to this single island (David *et al.* 2014). It is a common snake in coconut plantations in this island. A form of the White-Lipped Pit Viper *Trimeresurus albolabris* also occurs in Car Nicobar. Water Monitor Lizard *Varanus salvator andamanensis* and the Reticulated Python *Python reticulatus* are other larger reptiles. Among lizards, a large form of the Bay Island Forest Lizard *Coryphophylax subcristatus* is found in this island (Harikrishnan *et al.* 2014). The island is also home to the beautiful Green Crested Lizard *Bronchocela cristatella*, as well as the Nicobar Gliding Gecko *Ptychozoon nicobarensis*. The endemic Nicobarese Tree Skink *Dasia nicobarensis* is

VULNERABLE

Nicobar Sparrowhawk	<i>Accipiter butleri</i>
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NEAR THREATENED

Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>

ENDEMIC BIRD AREA 120: NICOBAR ISLANDS

Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>
Nicobar Sparrowhawk	<i>Accipiter butleri</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>

known from only this island (S. Harikrishnan *pers., comm.* 2014).

LAND USE

- Agriculture/Horticulture
- Fisheries
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Construction of jetties
- Increasing human population
- Habitat alteration by coconut plantations
- Impact of 2004 tsunami on coastal habitats

Car Nicobar was identified as a priority island for avian conservation during an IBA workshop.

Car Nicobar has the highest human population density and has the largest number of settled Nicobarese. Forest cover on this island is negligible, due to which the erosion rate is high and the coastal ecosystem is under threat (Andrews & Sankaran 2002).

Nicobarese, like any other similar community, are getting accustomed to some aspects of modernity through contact with settlers and the outside world. Their worldview and traditional sustainable living culture has been gradually changing, especially after the devastating tsunami. As an island community, they are dealing with many life challenges in the aftermath of the tsunami. This ought to make an impact on future land use and habitat modification, and ultimately biodiversity conservation.

Nicobarese look upon the Forest Department with suspicion, thinking that they will eventually take over their land. Such challenges could make the implementation of any conservation proposal ineffective or difficult.

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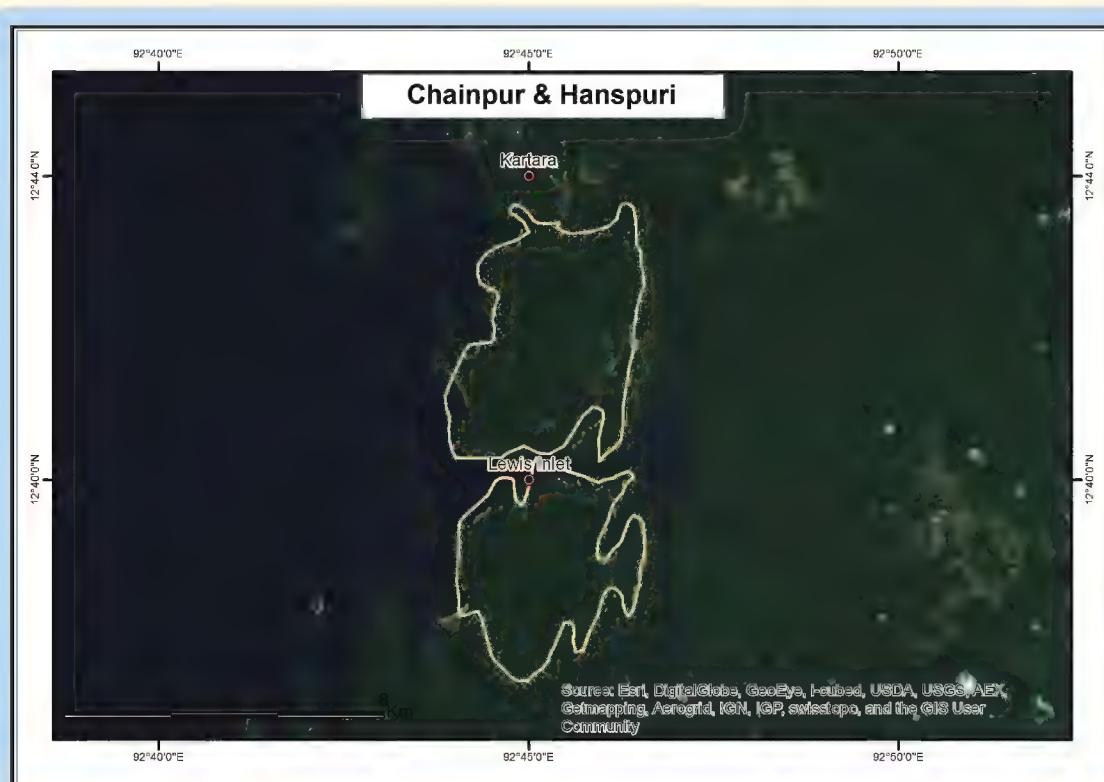
CHAINPUR & HANSPURI

IBA Code	: IN-AN-04	Altitude	: 0–150 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,000 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 46' 00" N, 92° 48' 00" E	Habitats	: Tropical Evergreen and
Ownership	: State		Semi-evergreen Forest,
Area	: Not Available		Mangrove Forest.

IN-AN-04

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Reserve Forests and ICRZ-1.



GENERAL DESCRIPTION

Chainpur and Hanspuri are two small villages in Middle Andaman, in the midst of tropical forest and in close proximity to mangrove-fringed creeks, as well as coastal and freshwater wetlands. Proximity to the equator and the sea ensures a hot, humid, and uniform climate. The Andamans receive rainfall from both the southwest and northeast monsoons. Maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

The area is covered with tropical evergreen forests. The common tree species are *Dipterocarpus griffithii*, *Hopea odorata*, *Ficus retusa*, and *Sideroxylon longipetiolatum*.

Shrub species are *Pandanus andamanensium* and *P. tectorius*. Among the climbers, *Calamus longisetu*, and *Daemonorops manii* are common. The mangrove forests consist of *Rhizophora apiculata*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Cerbera odollam*, *Heritiera littoralis*, and *Barringtonia racemosa*.

AVIFAUNA

In Endemic Bird Area 125: Andaman Islands, 13 restricted-range species have been listed (Stattersfield *et al.* 1998), of which nine have been reported from this IBA. The Andaman Crane *Rallina canningi*, an endemic species, is also found here, although its population figures



Chainpur and Hanspuri though small, have many endemic species such as Andaman Teal, Andaman Serpent-eagle, and Andaman Hawk-owl, among others

and status are unknown, as it is highly elusive. Vijayan (1999) did not observe a single bird during her survey and study of the Andaman Teal *Anas albogularis* from 1993 to 1997, creating the impression that the Andaman Crake is very rare. Therefore, BirdLife International listed it as Vulnerable in 1994. Later, it was found to be not so rare, so now it is considered Near Threatened.

The Andaman Teal *Anas gibberifrons albogularis* was not listed in the Red List by BirdLife International (2001) as it was considered a subspecies of Grey Teal *Anas gibberifrons* (Ali & Ripley 1987, Grimmett *et al.* 1998). The Grey Teal is widely distributed in Southeast Asia, Australia, New Zealand and many islands (del Hoyo *et al.* 1992). Rasmussen & Anderton (2005, 2012) and del Hoyo & Collar (2014) have elevated Andaman Teal to species level as *Anas albogularis*. Therefore, the Andaman Teal would be one of the rarest ducks in the world (Vijayan *et al.* (2005). They estimated that not more than 1,000 remain in the world. The Andaman Teal *Anas albogularis*, which is endemic to the Andaman Islands, is also found here. Vijayan & Sankaran (2000) found 12 Andaman Teals in the wetlands of Hanspuri during their survey between 1995 and 1998. Therefore, the wetlands of Hanspuri have much greater importance than was believed earlier, because 2% of the global population of this Vulnerable and restricted-range species is found in this IBA. The site could not be surveyed in 2003–04 (Vijayan *et al.* 2006).

Other restricted-range species include the Andaman Serpent-eagle *Spilornis elgini*, Andaman Scops-owl *Otus balli*, Andaman Hawk-owl *Ninox affinis*, Andaman Black

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Crake	<i>Rallina canningi</i>
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREAS 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

Woodpecker *Dryocopus hodgei*, and the Andaman Crake *Rallina canningi*.

OTHER KEY FAUNA

Originally, there were no large wild mammals on these islands. Wild Pig *Sus scrofa andamanensis* is supposed to have been introduced by the first human settlers, the

Negrito tribes who came over 2,000 years ago. The Spotted Deer *Axis axis*, Barking Deer *Muntiacus muntjack*, and Hog Deer *Axis porcinus* were brought in by the British at the turn of the 19th century. Bats such as the Flying Fox *Pteropus melanotus*, Andaman Island Spiny Shrew *Crocidura hispida*, and Andaman Masked Palm Civet *Paguma larvata tytleri* are some of the indigenous mammals in this area. Water Monitor Lizard *Varanus salvator andamanensis* and Saltwater Crocodile *Crocodylus porosus* are native to these islands.

LAND USE

- Nature conservation and research
- Tourism and recreation
- Recent human settlements from mainland
- Tribal Reserve

THREATS AND CONSERVATION ISSUES

- Poaching
- Modern agriculture
- Habitat destruction
- Encroachments

The Andaman Wild Pig population has declined drastically due to poaching by the local people. Hunting of common birds is also reported in this area. The growing human population exerts increasing pressure on the biodiversity.

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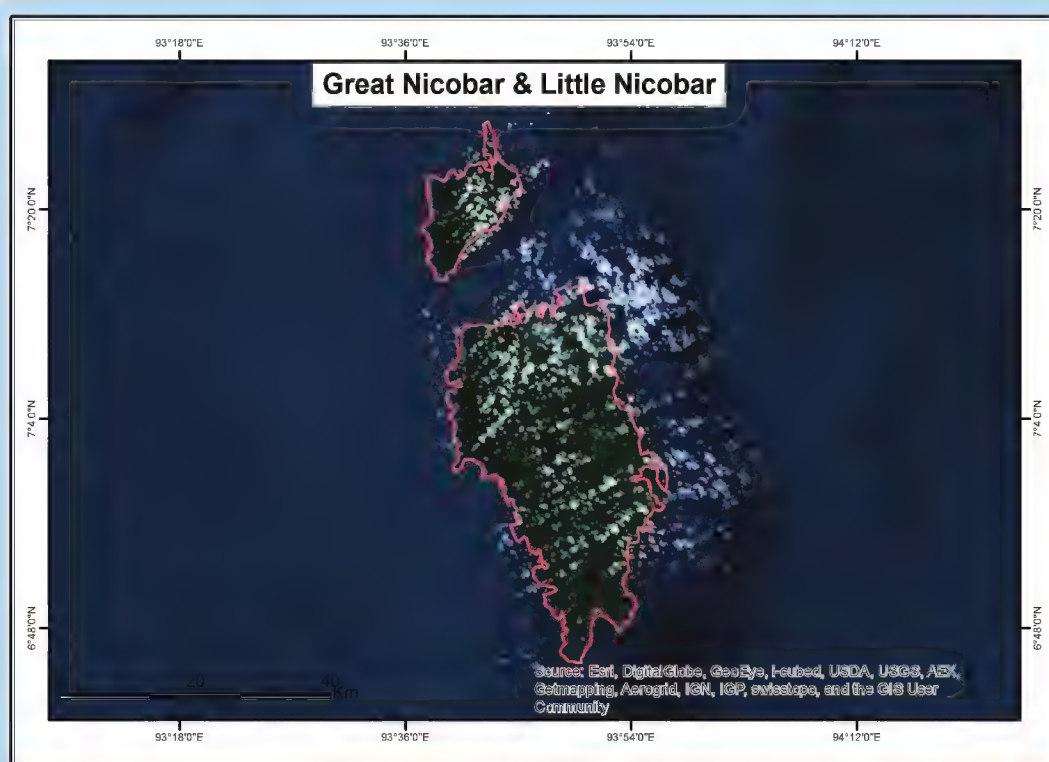
GREAT NICOBAR & LITTLE NICOBAR

IN-AN-05

IBA Site Code	: IN-AN-05	Altitude	: 0–642 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,800 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: Nicobar	Biogeographic Zone	: 12B Islands: Nicobars
Coordinates	: 7° 10' 00" N, 93° 42' 00" E	Habitats	: Lowland, Evergreen Rain Forest,
Ownership	: State		Semi-evergreen Rain Forest,
Area	: 85,319 ha		Littoral Forest, Mangroves

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 126: Nicobar Islands)

PROTECTION STATUS : Great Nicobar Island has two national parks, Galathea NP (110 sq. km) and Campbell Bay NP (426 sq. km), both declared in 1992, and two sanctuaries, Galathea Bay (11.44 sq. km) and Megapode Island (0.13 sq. km). But the two sanctuaries were almost destroyed in the mega-earthquake of 2004. Moreover, Great Nicobar Biosphere Reserve encompassing all these PAs and adjoining areas has been recognized as a UNESCO Biosphere Reserve in 2013.



GENERAL DESCRIPTION

The Nicobar Islands are one among 221 Endemic Bird Areas (EBAs) in the world and among the 27 major EBAs in Asia, and thus extremely important for bird conservation. The Nicobar group comprises 21 islands covering an area of 1,841 sq. km, but only 11 are inhabited. The Nicobar group contains three subgroups: the Great Nicobar, the Nancowry and the Car Nicobar subgroups. The Great Nicobar subgroup is the southernmost and comprises 11 islands and smaller islets, of which three are inhabited (Sankaran

1998). The highest point of Nicobars is Mt Thullier, which at 642 m is the third highest in A & N Islands. This gives a unique profile to the island chain, where the highest point is at North Andaman and the height gradually goes down to a minimum in the central island of Car Nicobar before rising again to a high point in the southernmost Great Nicobar Island at Mt Thullier. The mongoloid tribe Shompens inhabit the forests of Great Nicobar Island, while there are a few settlements of Nicobarese tribals, who are the major local inhabitants of the Nicobar group as a whole.



PANKAJ SEKHSARIA

The endemic Nicobar Megapode is now under severe hunting pressure due to the use of modern firearms by tribals

The mega-earthquake of 9.3 magnitude and subsequent tsunami on December 26, 2004 had disastrous impacts on the biodiversity of the Nicobar Islands. Their close vicinity to the epicentre of the earthquake led to the maximum damage levels in Nicobar Islands in terms of human lives and coastal biodiversity. The tsunami completely destroyed or significantly damaged all vegetation that existed in the coastal area between the beach and the hill. The mega-earthquake resulted in a tilt in the land, with the southernmost Nicobar Islands sinking by about 1.6 m. Coastlines receded towards the hills, at places by several hundred metres, often resulting in very little or no land between the hills or high ground and the sea (Sankaran 2005, Balasubramanian *et al.* 2012).

Earlier, about 80% area of the Nicobar Islands were covered with primary forest, and at least 60% were relatively undisturbed (Sankaran 1995), but the tsunami of 2004 destroyed some part of the forest. About 50% of Great Nicobar is protected as national parks and about 85% comprises the Great Nicobar Biosphere Reserve (88,500 ha), which was designated as a Tribal Reserve for the Shompens and Nicobarese under the Andaman & Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956. The core area consists of two national parks, namely, Campbell Bay and Galathea, and one sanctuary, the Galathea Bay Sanctuary. Great Nicobar is the only island in the archipelago with a perennial river, while Megapode Island located off the southwest coast is uninhabited and is a wildlife sanctuary (Sankaran 1995). This small flat islet, about 0.13 sq. km in area, has been completely submerged

after the tsunami (Sankaran 2005).

The forest type of the Nicobar Islands can be classified as Tropical Evergreen, with forested or grassland inland areas. All islands in the Great Nicobar subgroup are densely forested (Sankaran 1998). In Great Nicobar, 11% of the vascular flora are endemic to the island, 30 species are rare, endangered and confined to a few locations on the island, and about 30% of the flora are not found on the Indian mainland (Andrews & Sankaran 2002). Characteristic endemics such as the tree fern *Cyathea albo-setacea* and an ornamental orchid *Phalaenopsis speciosa* are found only on Great Nicobar and the adjacent islands (Pande *et al.* 1991, cited in Andrews & Sankaran 2002).

AVIFAUNA

Megapodius nicobariensis abbotti, a subspecies of the Nicobar Megapode, occurs on Great Nicobar, Little Nicobar, Kondul, Menchal, Treis, and Meroe, and the nominate race *M. n. nicobariensis* on Camorta, Trinket, Nancowry, Katchall, Teressa, Bompoka, and Tillanchong Islands (Sankaran 1998, Sivakumar 2007), and on Cubra and Pilo Milo Islands (Balasubramanian *et al.* 2012).

Theis and Trax Islets supported a single or two pair(s) prior to the tsunami, and post-tsunami, the islets are really small and quite pauperized in fauna and flora, having been washed over by the waves (Manish Chandi, *pers. comm.* 2014).

According to BirdLife International (2001), the Nicobar Megapode is a Vulnerable species.

The largest population of *Megapodius nicobariensis*

abbotti occurs on Great Nicobar Island, where 405 breeding pairs have been estimated after undergoing a significant decline following the 2004 tsunami (Sivakumar 2007). The second largest population is in Little Nicobar Island. Both these islands are the largest in this group and harbour 96% of megapodes. However, when compared to a pre-tsunami survey by Sankaran (1995), 65% reduction in population has been estimated from these two islands (Sivakumar 2007).

The total population of Nicobar Megapode in Nicobar Islands was reduced to 788 pairs in 2006, following the 2004 tsunami (Sivakumar 2007), however, numbers appeared to be recovering since. Surveys conducted in 2009–2011 have resulted in an estimate of 376–752 breeding pairs, indicating that the population has been stable since 2006 (Zaibin & Pramod 2011).

The Nicobar Parakeet *Psittacula caniceps*, although not as rare as the Nicobar Megapode, is endemic to the Great Nicobar subgroup. It is apparently common. Its forest habitat was under pressure earlier, but the rate of decline has come down in recent years due to a court order on the ban on logging.

Abundance of the endemic bird species in the Nicobars was found to be less in the regenerating tsunami-affected areas than in the adjacent forest habitat. This suggests that their re-colonisation from adjacent unaffected habitats and establishment has been only partial (Balasubramanian *et al.* 2012).

Stattersfield *et al.* (1998) identified nine restricted-range species of birds from the Nicobar Endemic Bird Area. In this IBA, eight such species are found. Only the Nicobar Bulbul *Hypsipetes nicobariensis*, which is restricted to the Nancowry subgroup, has never been recorded from Great Nicobar and Little Nicobar IBAs.

VULNERABLE

Nicobar Sparrowhawk	<i>Accipiter butleri</i>
Nicobar Megapode	<i>Megapodius nicobariensis</i>

NEAR THREATENED

Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Nicobar Parakeet	<i>Psittacula caniceps</i>
Andaman Hawk-owl	<i>Ninox affinis</i>

ENDEMIC BIRD AREA 126: NICOBAR ISLANDS

Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>
Nicobar Sparrowhawk	<i>Accipiter butleri</i>
Nicobar Megapode	<i>Megapodius nicobariensis</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Nicobar Parakeet	<i>Psittacula caniceps</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>



Shompen Frog *Limnonectes shompenorum*

S. HARIKRISHNAN

Great Nicobar and Little Nicobar also have many subspecies of birds which are not included in the Threatened category by BirdLife International (2001), but they are important as many of them are highly endemic and range-restricted. The Nicobar Scops-owl *Otus alius* has been described as a new species (Rasmussen & Anderton 2012).

With recent advances in taxonomy, it is likely that many subspecies will be elevated to species level in future (as is the case of Nicobar Scops-owl).

Rasmussen & Anderton (2005, 2012) have upgraded many subspecies to full species and if their taxonomic recommendations are accepted, an additional species that is found in this IBA is Nicobar Jungle-flycatcher *Cyornis nicobaricus*.

Recently, Rajeshkumar *et al.* (2012) reported an apparently new species of *Rallina* crane, temporarily named Great Nicobar Crane, from Great Nicobar Island. No species name has been assigned yet.

OTHER KEY FAUNA

There is no large wild terrestrial mammal in the Great and Little Nicobars, except Wild Pig *Sus scrofa andamanensis*, which was probably brought in by early settlers. Nicobar Crab-eating Macaque *Macaca fascicularis*, also called Long-tailed Macaque, is a common macaque of Southeast Asia. The subspecies *M. fascicularis umbrosa* is found on the Nicobar Islands. Crab-eating Macaque is present in large numbers on the adjacent Little Nicobar and further north in Katchal (Nancowry subgroup). It was probably introduced there by traditional barter/exchange and trade with the Nicobarese inhabitants a century or more ago (Manish Chandi, *pers. comm.* 2014). Another species of interest is the Giant Robber Crab *Birgus latro*, the largest land crab in the world (Gandhi 2000). The Horseshoe Bat *Rhinolophus cognatus* is a fairly common indigenous mammal. The Endangered Nicobar Treeshrew *Tupaia nicobarica* is endemic to Great and



MANISH CHANDI

Removal of eggs for consumption is no longer sustainable

Little Nicobar Islands (Saha & Bhatta 2008) and it needs conservation attention.

Protecting this IBA would not only increase the survival chances of restricted-range birds, but also many endemic and Endangered reptiles such as the Nicobarese Worm Lizard *Dibamus nicobaricus* (Anon. 2001). Other than sea turtles, Malayan Box Turtle *Cuora amboinensis* and the Salt Water Crocodile *Crocodylus porosus*, these islands are home to 30 species of reptiles and nine species of frogs. Humayun's Bronzeback *Dendrelaphis humayuni* is a common snake in the coastal forests of Great and Little Nicobar Islands. The endemic Nicobar Cat Snake *Boiga wallachi* occurs only in Great and Little Nicobar. Recent surveys in these islands revealed the existence of two previously unknown species of snakes from Great Nicobar: a colour form of the Malayan Wolf Snake *Lycodon subcinctus* and a yet unidentified large Trinket Snake *Coelognathus* sp. (Harikrishnan *et al.* 2014) Other reptiles like the Small-eared Island Skink *Lipinia macrotympanum* (Vulnerable), Daniel's Long-tailed Agama *Bronchocela danieli*, and the Large-eared Skink *Scincella macrotis*, which is known only from Galathea Bay, are also reported from this area. Two Endangered amphibians, the Nicobarese Tree Frog *Polypedates insularis* and Shompen



MANISH CHANDI

Trapping of Nicobar Megapode on its mound is a new menace

Frog *Limnonectes shompenorum* are reported from this IBA.

Other reptiles are the Nicobar Water Monitor *Varanus salvator nicobarensis* and Reticulated Python *Python reticulatus* on land, creeks, and lagoons, while Green Turtle *Chelonia mydas*, Leatherback Turtle *Dermochelys coriacea*, Olive Ridley *Lepidochelys olivacea*, and Hawksbill Turtle *Eretmochelys imbricata* inhabit the sea.



MANISH CHANDI

Hunting is now a major threat to the Nicobar Megapode



ASAD R. RAHMANI

Great Nicobar still has one of the finest pristine tropical rain forests in India

LAND USE

- Nature conservation and research
- Agriculture
- Transport
- Tourism and recreation
- Fisheries

THREATS AND CONSERVATION ISSUES

- Construction and impact of free port
- Immigration of mainlanders
- Road building
- Infrastructure development and ancillary activities
- Introduced species like dogs and cats pose a threat to native fauna
- Coastal habitat disturbed by coconut plantation
- Hunting and predation
- Natural disasters such as earthquakes and tsunamis

The recent discovery of what is perhaps a new species of bird, the Great Nicobar Crane from Great Nicobar reported by scientists of ZSI, and earlier two of snakes and other herpetofauna, indicates that this fairly large isolated island

with a dense canopy of Tropical Rain Forest, the interior of which remains largely unexplored, needs far more attention from biologists, including ornithologists.

IMPACT OF TSUNAMI

Sankaran (2005) reported in detail on the impact of the tsunami and earthquake in the Nicobar Islands. "The tsunami had completely destroyed or significantly damaged all vegetation that existed in the coastal area between the beach and the hill. The coastline had been altered, promontories destroyed, smaller indentations straightened, and adjacent bays have been joined. Several new islets have been broken off the main islands." "Littoral forests have been variably damaged. The damage by uprooting of trees was enormous." A study on the post tsunami revival of the coastal vegetation has been carried out by SACON under funding support of the Department of Environment & Forests. Some of the mangrove forest areas damaged due to subduction of coastal areas have been replanted with suitable species by the Forest Department.

Almost all terrestrial species present in the Nicobar Islands were distributed in suitable habitats throughout the islands. However, almost all species were seen at

higher densities, significantly so in the case of the Nicobar Megapode, in the littoral forests along the coast. Thus, the loss of coastal habitat would have resulted in declines in populations of all species. The species and faunal groups that have been worst affected include the Nicobar Megapode, an endemic to the Nicobar Islands whose greatest concentrations, however, were in littoral forests due to the propensity of megapodes to build incubation mounds close to the beach (Sankaran 1995, Sivakumar 2000).

UNESCO (2013) included Great Nicobar Island in its World Biosphere Reserve network. Great Nicobar was identified as a priority island for avian conservation, but the Government of India has several developmental plans for the Nicobar Islands, particularly the building of a dry dock and refueling base for international shipping in Galathea Bay, and making Great Nicobar a free port. If implemented, these projects will irrevocably damage the island ecosystem and expedite loss in the island biodiversity, as it is too fragile to sustain the impact of such activities. Alteration of the ecosystem would adversely affect and accelerate the extinction of endemic avifauna, including the Nicobar Megapode, which is also under severe pressure

due to hunting by local inhabitants and predation on its eggs by the Monitor Lizard *Varanus salvator*. However, the primary threat to the Nicobar Megapode is habitat loss and demographic changes. A 35 km long strip of forest along the southeastern coast has been depleted in Great Nicobar due to settlement of mainland Indians (Sankaran 1995).

Although over 50% of Great Nicobar has been protected as national parks and about 85% as a biosphere reserve, this is inadequate. The national parks protect only the central portions and less than 15% of the coastal area of Great Nicobar. On islands, the first habitat to be destroyed under biotic pressure is coastal forest. This habitat is crucial to the survival of the Nicobar Megapode. Between the national parks there is a broad strip of primary forest through which the east-west road passes. The southern tip of Great Nicobar, which is unprotected, has the largest uninhabited flat coastal forest in the Nicobar group and harbours large populations of endemic species such as the Nicobar Serpent-eagle, Nicobar Megapode, Nicobar Parakeet, and the Nicobar Pigeon. About 40% of the Great Nicobar coast and most of the southern tip and central portion is uninhabited at present. Any change in policy can result in these areas being destroyed. These



ASAD R. RAHMANI

Tree Ferns grow luxuriantly in parts of Great and Little Nicobar Islands



SATISH PANDE

Great Nicobar Serpent-eagle *Spilornis klossi* is confined to primary forest in the Great Nicobar Island and a few adjoining islands

areas must be protected by creating a single national park merging the two existing ones and including the southern tip of the island (Sankaran 1995). The designation of Little Nicobar as a biosphere reserve was recommended even by Rodgers & Panwar (1988).

The study by Andrews & Sankaran (2002) reveals that the Reserve needs to be redesigned to include the southern tip of Great Nicobar, which has almost the only lowland coastal forest remaining on the east coast of this island, harbouring good populations of endemic fauna. Furthermore, the unique culture and lifestyle of the Shompens of this reserve is now threatened by a rapid increase in the settlement of mainlanders, unequal barter, cultural influences, along with road building, quarrying, and other developmental activities.

More recently, a proposal to convert the southernmost portion of the island into an Indian Air Force landing strip can have deleterious effects to endemic species such as the Nicobar Megapode, Robber Crab, and turtle nesting beaches that are found here. This is part of the Tribal Area and is south of the Galathea Bay Sanctuary (Manish Chandi, *pers. comm.* 2014).



RAJAT BHARGAVA

Tsunami of December, 2015 had a great impact on the coastal vegetation of Nicobar Islands

S. HARIKRISHNAN



Nicobar Cat Snake *Boiga wallachi*, an endemic

KEY CONTRIBUTORS

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INTERVIEW ISLAND WILDLIFE SANCTUARY

IN-AN-06

IBA Site Code	: IN-AN-06	Rainfall	: 3,500 mm
Administrative Region	: Andaman & Nicobar Islands	Temperature	: 20 °C to 32 °C
(Union Territory)		Biogeographic Zone	: 12A Islands: Andamans
District	: North and Middle Andaman	Habitats	: Lowland Evergreen and
Coordinates	: 12° 56' 17" N, 92° 42' 31" E		Semi-evergreen Forest,
Ownership	: State		Mangrove Forest,
Area	: 13,387 ha		Littoral Forest,
Altitude	: 0–87 msl		Intertidal zone

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Wildlife Sanctuary, established 1977.



GENERAL DESCRIPTION

Interview Island Sanctuary is the largest island sanctuary in the Andaman & Nicobar Islands (Gandhi 2000). It is situated southwest of North Andaman Is., separated by c. 10 km from the west coast of Middle Andaman, and is c. 20 km from Mayabundar, the district headquarters of North and Middle Andaman. There is no permanent human habitation on the island, except a police outpost on the west coast and a forest camp on the east coast.

Near the beach at the south of the island, there is a perennial freshwater stream inside a cave. White-bellied Swiftlets

Collocalia esculenta have made their nests in the cavern around the pool (Pande *et al.* 1991). The terrain is almost flat, except for steep, rugged hills towards the southeast.

The major vegetation types are Andaman Tropical Evergreen, Andaman Semi-evergreen, Littoral, and Mangrove. Semi-evergreen forest is dominated by *Sterculia campanulata*, *Dipterocarpus alatus*, *Artocarpus lakoocha*, *A. chaplasha*, and *Pterocarpus dalbergioides* (Sivaganesan & Kumar 1994). Of the total area (13,100 ha), only about 7,100 ha is covered by semi-evergreen forest, the remaining area harbours mangroves and littoral forests.



DHIRTIMAN MUKHERJEE

Andaman Treepie *Dendrocitta bayleyi* is the smallest among the five tree-pies found in the Indian subcontinent

AVIFAUNA

Interview Island is one of the last refuges for the endemic and Vulnerable Andaman Teal *Anas albogularis*. Although *A. gibberifrons albogularis* was considered as a subspecies of Grey Teal and not listed as Threatened by BirdLife International (2001), recently the subspecies *albogularis* has been uplisted as a full species and therefore now it is of great conservation concern in India (Rasmussen & Anderton 2005, 2012; del Hoyo & Collar 2014). Lalitha Vijayan conducted studies on this bird and estimated a population between 500 to 600 individuals (Vijayan & Sankaran 2000). Sighting of 46 Andaman Teal in Interview Island WLS indicates that this IBA is very important for its survival. More recently, Vijayan *et al.* (2006) counted only 14 Andaman Teal on Interview Island.

Other species, not of global conservation concern but extremely important for India, are the White-bellied Swiftlet *Collocalia esculenta* and the Indian Edible-nest Swiftlet *Aerodramus fuciphaga*. Both species nest in the caves complex on Interview Island. Around 2,000 adult birds of *A. fuciphaga* are recorded. This is the most important cave complex for swiftlet conservation in the Andaman Islands (Sankaran 1998).

Of the 12 extant restricted-range species listed by BirdLife International from the Andaman Islands Endemic Bird Area (Stattersfield *et al.* 1998), nine species are found in this IBA. While Andaman Crane *Rallina canningi* is listed in the Threatened category, the other eight species are Near

Threatened (BirdLife International 2001). The Andaman Crane, a marsh bird, has a small population, narrow range of distribution, and is extremely difficult to observe. Perhaps it is not so rare as it was thought to be, but its habitat is under tremendous biotic pressure (Vijayan & Sankaran 2000). Nearly 100 years ago, it was abundant and easily snared. Many specimens were collected from Port Blair, the capital of Andaman & Nicobar Islands. It has been studied by Vijayan & Ezhilarasi (2007) and Ezhilarasi (2009).

The Andaman Hawk-owl *Ninox affinis* is endemic to the Andaman & Nicobar Islands, where it occurs in mangrove forest, light wooded country, and forest clearings (Grimmett *et al.* 1998). Manchi & Sankaran (2009) recorded it on Interview Island. It appears to be a major predator of Indian Swiftlet *Aerodramus fuciphagus*. Its tolerance of degraded habitats raises the hope that it may not be as uncommon as it is feared to be. Sankaran (1998) frequently sighted it between January and March 1996 at the southern tip of the Great Nicobar (another IBA). He found it to be very parochial, and noted that a pair regularly occupied a particular perch at dusk. A study of its ecology and status is urgently required.

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125- ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

OTHER KEY FAUNA

The island has rich coral formations with associated species such as giant clams and reef-dwelling fish. About 70 feral Asiatic Elephant *Elephas maximus* were reported on Interview Island (Sivaganesan & Kumar 1994). The elephants were brought from the mainland in the early 1960s for timber operations and abandoned when the timber company went bankrupt. At that time there were 40 elephants, which were supposed to have increased to 70, but in a more recent study by Ali & Krishnan (2001), the



Interview Island is the largest island sanctuary in the Andaman

number is estimated between 30–35. Both these studies have recommended the removal of these feral elephants to save the natural forest. Interestingly, Interview Island Sanctuary was declared in 1985 mainly to protect these very same feral elephants!

Other introduced mammals include the Spotted Deer *Axis axis*, Common Domestic Cat *Felis catus*, Dog *Canis familiaris*, Goat *Capra hircus*, and Three-striped Palm Squirrel *Funambulus palmarum*. The Andaman Wild Pig *Sus scrofa andamanensis* and Andaman Masked Palm Civet *Paguma larvata tytleri* are also present (Sivaganesan & Kumar 1994). The Bay Island Forest Lizard *Coryphophylax subcristatus* and the Emerald Day Gecko *Phelsuma andamanense* are reported from Interview Island. Damage to vegetation by introduced herbivores such as elephants and deer seems to have drastically reduced the abundance of forest floor reptiles (S. Harikrishnan, unpubl.).

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Forest degradation due to introduced herbivores
- Poaching and unsustainable exploitation
- Infestation by *Eupatorium* weed

One of the most problematic conservation issues on Interview Island is the impact of feral elephants

(Sivaganesan & Kumar 1994, Ali & Krishnan 2001). Elephants debark and uproot trees, causing mortality of trees and leading to the formation of gaps in the forest. Understorey species such as *Calamus* sp. and *Areca triandra* have been eaten up and become almost nonexistent in the sanctuary. This has led to the degradation of the native evergreen closed canopy vegetation, which may ultimately have significant impact on the native fauna.

Another problem is that of cattle, abandoned by settlers when they become unproductive. These cattle often turn feral (Ali & Krishnan 2001) and may have long-term negative impacts on the indigenous ecosystem.

Uncontrolled collection of timber, sea cucumber, shells, and coral, and targeting of crocodiles by poachers from Myanmar, Thailand, and other Southeast Asian countries poses an additional threat to all the islands, including this IBA (Gandhi 2000).

The collection of nests of Indian Swiftlet was unsustainable and rampant, but there has not been an apparent decline in their numbers yet because nest collection had begun only recently (Sankaran 1998). However, since early 2000, the Department of Environment & Forests in a collaborative project with SACON is according protection during the breeding season to the cave complex used by swiftlets for nesting.

The island was severely impacted by the mega earthquake and tsunami of 2004 and due to elevation of the land mass, there was extensive damage to mangrove forests on its northern side and the coral reefs along its west coast.



HARIKRISHNAN

Bay Island Forest Lizard *Coryphophylax subcristatus*

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JARAWA RESERVE

IN-AN-07

IBA Site Code	: IN-AN-07	Altitude	: 0–290 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: Middle and South Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 40' 00" N, 92° 47' 60" E	Habitats	: Tropical Wet Evergreen,
Ownership	: State		Tropical Semi-evergreen,
Area	: 91,108 ha		Mangrove Forest, Littoral Forest

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Areas 125: Andaman Islands)

PROTECTION STATUS : Tribal Reserve under A & N Islands (Protection of Aboriginal Tribes) Regulation, 1956.



GENERAL DESCRIPTION

The Jarawa Reserve area extends in a long strip from Middle to South Andamans along the western coast. The area has been set aside for the Jarawas, an aboriginal Negrito tribe of hunter gatherers entirely dependent on the forest and marine resources for their existence (Gandhi 2000). Until recently, they were hostile and isolated from modern civilization, but now there is increasing contact.

Rodgers & Panwar (1988) recommended that the site should be declared as a wildlife sanctuary, to allow the

inhabitants to pursue their traditional way of life and to give a strong deterrent to any incompatible land use. The area was designated as the Jarawa Tribal Reserve under the Andaman & Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956.

This area is characterized by the presence of different forest types including Evergreen and Moist Deciduous forests, mangroves, large perennial freshwater streams, large freshwater marshes, and the largest remaining stands of Nypa Palm *Nypa fruticans* (Andrews & Sankaran 2002) in Andaman.

DHRITIMAN MUKHERJEE



The Jarawa Reserve, created to protect the lifestyle of the endemic Jarawa people, is a repository of plants and animals, and one of the most important IBAs of Andaman & Nicobar

AVIFAUNA

The hostility of the Jarawas towards intruders in their territory has made it impossible to carry out detailed surveys of the flora and fauna of the reserve. At least 11 restricted-range species of birds, of which one, the Andaman Crake *Rallina canningi* is globally Threatened, are found in this IBA. It is evident that the reserve area is rich in living resources as it provides sustenance to the Jarawas by way of edible and medicinal plants, meat, fish, wood, and material for building their huts, and other requirements (Gandhi 2000). Recent surveys have shown that the forest of Middle Andaman is rich in bird and butterfly diversity (Davidar *et al.* 1995), and a large number of endemic and threatened plants. The population of the endemic Andaman Wild Pig *Sus scrofa andamanensis* appears to be healthy. A substantial portion of the best forested areas of the Middle and South Andaman is covered by the reserve, so the reserve is expected to be exceptionally rich likewise (Gandhi 2000). Except for the Narcondam Hornbill *Aceros narcondami*, which is restricted to Narcondam Island (Ali & Ripley 1987, Grimmett *et al.* 1999), and the Nicobar Megapode *Megapodius nicobariensis* which was earlier distributed in the Andamans and is now extinct in these islands, all the extant endemic species identified by Stattersfield *et al.* (1998) from this Endemic Bird Area are likely to be seen in the reserve. Moreover, many endemic subspecies of birds

(Abdulali 1964, Vijayan & Sankaran 2000) (some of them now elevated to species level) are also found in this IBA. Therefore, the conservation value of this IBA is immense.

Till recently, so little was known about the Andaman Crake that BirdLife International (2001) had listed it as Data Deficient. SACON carried out a detailed study during 2004–2007 with status surveys on various islands and ecological studies at two locations, but mainly at Pathilevel, North Andaman (Vijayan & Ezhilarasi 2007, Ezhilarasi 2009). Its population could not be estimated due to low sighting data and difficulty in assessing the distance of calls (Vijayan 2009). The mean encounter rate was 0.29 bird/point. Smaller islands had lower encounter rate, while it was higher on larger islands such as South, Middle, and North Andaman. Considering the intact forest in the Jarawa Reserve, it is presumed that a fairly good population is present in this IBA.

Rasmussen & Anderton (2005, 2012) have upgraded many subspecies to species level. For instance, the earlier three subspecies of Pompadour Pigeon *Treron pompadora* have been upgraded to species, and one such upgraded species, Andaman Green-pigeon *Treron choropterus* has been found in Andaman & Nicobar Islands. Andaman Green-pigeon is still common and may not be of much conservation concern, but there are some cases where the 'new' species has very restricted distribution and may

be extremely rare. Earlier, as a subspecies, it was not considered of great conservation concern, therefore not listed by BirdLife International (2001), but now it must be reassessed. A good example is the subspecies of the Barn Owl *Tyto alba* found in Andaman, *T. alba deroepstorffi*. Ali & Ripley (1987) named it as Andaman Barn Owl and state “evidently a very scarce resident in the Andaman Islands.... not recorded from the Nicobars.” Rasmussen & Anderton (2005, 2012) as well as del Hoyo & Collar (2014) treat it as a full species, which means that it is perhaps one of the endemic and rare species of the Andaman Islands. As the forest is largely intact in the Jarawa Reserve, the Andaman Barn Owl is likely to be present in fairly good numbers in this site. Status survey of this bird is urgently required.

NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

OTHER KEY FAUNA

The Andaman Wild Pig *Sus scrofa andamanensis*, Andaman Masked Palm Civet *Paguma larvata tytleri*, introduced Cheetal *Axis axis*, and Flying Fox *Pteropus melanotus* are usually seen here. This site also supports a unique diversity of herpetofauna, including rare and endemic species such as Anderson’s Pit Viper *Trimeresurus andersoni*, Small-eared Island Skink *Lipinia macrotympanum* and Andaman Water Monitor *Varanus salvator andamanensis* (Anon. 2001).

LAND USE

- Nature conservation and research
- Tribal Reserve



Anderson’s Pit Viper *Trimeresurus andersoni* is found only on the Andaman Islands, with one stray record from Car Nicobar in 1937

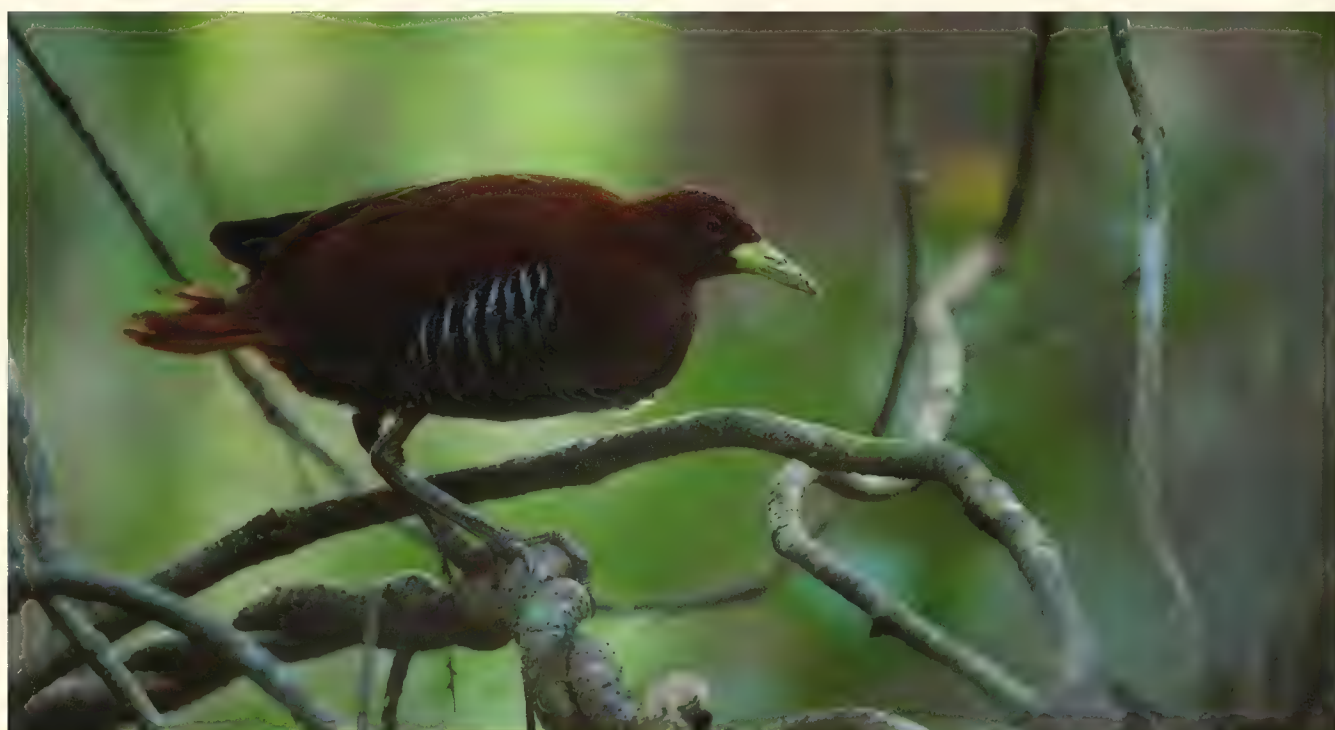
HARIKRISHNAN S

THREATS AND CONSERVATION ISSUES

- Introduced Cheetal poses a major threat to indigenous flora
- Development of towns and villages adjacent to the reserve
- Immigration of mainlanders and its ecological impact
- Traffic on the Andaman Trunk Road
- Poaching and illegal fishing
- Increasing tourism

Andrews & Sankaran (2002) mentioned that the greatest threat to the reserve is the Andaman Trunk Road (ATR) which cuts right through it, causing irreversible damage and disturbance to the forest. The road has brought with it roadside settlements, some of which have now become small townships. There is continuous traffic on the road. People from the settlements encroach on the reserve area and deplete the food and natural resources of the Jarawas. The settlers are involved in illegal activities such as poaching Andaman Wild Pig, which is an important food resource for the Jarawas, cutting wood from the reserve, and fishing. Threats to the reserve also threaten their culture, specially due to increasing tourism pressure.

In recent years, stringent measures have been taken by the A & N Administration, such as better protection with increased joint patrolling, restricting traffic movement on the ATR in convoys which are escorted by police, and strengthening the Tribal Welfare Department/Aadim Janjati Vikas Samiti (AJVS).



Andaman Crake *Rallina canningi*, an endemic species

IN-AN-07

KALYAN VERMA

KEY CONTRIBUTORS

Ravi Sankaran, K. Sivakumar, Tara Gandhi, Ajai Saxena.

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KADAKACHANG OR KATAKATCHANG

IN-AN-08

IBA Site Code	: IN-AN-08	Altitude	: Not Available
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: South Andaman	Biogeographic Zone	: 12A Islands: Andaman
Coordinates	: 11° 43' 46" N, 92° 43' 38" E	Habitats	: Tropical Wet Evergreen and
Ownership	: State		Tropical Semi-evergreen, and
Area	: Not Available		Littoral Forest

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

Kadakachang, also spelt Katakatchang, is situated between Bamboo Flat and Wimberlygunj in South Andaman Island. The area harbours lowland evergreen rain forest, semi-evergreen rain forest, and mangrove forest. It also has mangrove swamps and marshes. Coconut plantations have destroyed much of the earlier vegetation (Vijayan & Sankaran 2000). The climate is hot and humid, with heavy rainfall from both the southwest and northeast monsoon. The maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

Despite biotic pressures, the mangroves used to be fairly intact. Large stands of *Rhizophora apiculata*, *Bruguiera*

gymnorhiza, *Ceriops tagal*, *Cerebera odollam*, *Heritiera littoralis*, *Canarium euphyllum*, *Dipterocarpus griffithii*, *Hopea odorata*, *Barringtonia racemosa*, *Ficus retusa*, and *Sideroxylon longipetiolatum* were seen. *Pandanus andamanensium* and *P. tectorius* were common along the creeks. However, after the 2004 mega earthquake, the land subsided and a large tract of the mangrove forest died over next three to four years, severely degrading the mangrove forests of the area and the swamps as well. The swamp and marshes are now covered with sedges and grasses. Coconut plantation has replaced the native vegetation in many places, but some of these have also become permanently submerged and over the years they are getting converted back to marshland.



DHRTIMAN MUKHERJEE

The Andaman & Nicobar Islands have some of the finest mangroves and tropical forests in India

AVIFAUNA

As in all the IBAs in the Andaman & Nicobar Islands, not much work has been done on birds in Kadakachang. The Andaman Crake *Rallina canningi*, a globally Threatened species, is found here, but not much is known about its distribution.

The Andaman Teal *Anas albogularis*, endemic to the Andaman Islands, is found here (Vijayan & Sankaran 2000). This Teal is reported in flocks of tens and believed to breed in the marshes of Kadakachang. Vijayan & Sankaran (2000) estimate that its worldwide population is 500–600, making it one of the rarest taxa of the Anatidae in the world. Vijayan *et al.* (2006) saw six in Kadakachang (=Katakatchang) in 2003–04.

Of the 13 restricted-range species noted by BirdLife International from the Endemic Bird Area of Andaman Islands (Stattersfield *et al.* 1998), 11 are found in this IBA. Most of them are quite common in suitable habitats. Many are listed as Near Threatened (BirdLife International 2001, 2014).

Except for two species, Nicobar Scrubfowl or Megapode *Megapodius nicobariensis*, which is extinct from this Endemic Bird Area (EBA) and Narcondam Hornbill *Aceros narcondami* which is restricted to Narcondam Island, all other Restricted-range species of this EBA are found in Kadakachang. This shows the important role of this IBA in the conservation of endemic avifauna of Andaman

Islands. Moreover, many endemic subspecies of birds (Abdulali 1964, Vijayan & Sankaran 2000) are also found in this IBA.

The Beach Stone-plover *Esacus recurvirostris*, earlier considered a subspecies of Great Stone Plover *E. magnirostris* (Ali & Ripley 1987) is now considered a full species (Rasmussen & Anderton 2005, 2012; del Hoyo & Collar 2014) listed as Near Threatened by BirdLife International (2001, 2014). It has a wide distribution from Andaman Islands to Australia, but the range is linear along the narrow coasts. Its total population may be not more than 1,000 birds in Australia (Marchant & Higgins 1993, cited in BirdLife International 2001) but Ali & Ripley (1987) say that it is 'recorded on almost every island.... Not in Nicobar'. It is very rare on and around Sumatra (BirdLife International 2001). This species is likely to be present on the extensive undisturbed beaches in this IBA, but no published record is available. Due to changes after the 2004 earthquake, many aquatic birds of the area have shifted to nearby areas such as Sipighat on the other side of the bay to the south. However, the area is getting back some of its swampy vegetation and needs to be monitored for its recovery as a key wetland of the islands.

OTHER KEY FAUNA

Not much is known about the mammalian and reptilian fauna of Kadakachang. The Andaman Water Monitor

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
Beach Thick-knee	<i>Esacus magnirostris</i>

ENDEMIC BIRD AREA 13: ANDAMAN ISLANDS

Andaman Teal	<i>Anas albogularis</i>
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

Varanus salvator andamanensis and Saltwater Crocodile *Crocodylus porosus*, widely distributed in the Andaman Islands, are found here, albeit in depleted numbers due to poaching. The Andaman Islands are well known for endemic species and subspecies of reptiles and amphibians, but there is little published information on this aspect of Kadakachang.

LAND USE

- Nature conservation and research
- Tourism and recreation
- Plantation
- Fishing

THREATS AND CONSERVATION ISSUES

- Indiscriminate fishing, poaching, and habitat destruction
- Coconut plantation

Suitable habitats for several species of waders, raptors, terns, and especially for Andaman Teal are still available. Marsh habitat of this island is an excellent breeding

ground for crustaceans and fishes. Sadly, indiscriminate fishing and poaching in recent years is gradually altering these habitats. Coconut plantation by clearfelling primary forest has altered the habitat, but now such activities have been banned by the Supreme Court. Impact of the mega earthquake and tsunami, and its impact on coastal wetland and its subsequent recovery and re-colonization by aquatic species including endemic waterbirds, needs to be monitored.

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LANDFALL ISLAND WILDLIFE SANCTUARY

IBA Site Code	: IN-AN-09	Altitude	: 0–40 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: Middle & North Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 13° 39' 38" N, 92° 00' 15" E.	Habitats	: Tropical Wet Evergreen and
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: 2,948 ha		Littoral Forest

IN-AN-09

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Wildlife Sanctuary, established 1977.



GENERAL DESCRIPTION

Landfall Island Wildlife Sanctuary lies about 5 km north of North Andaman Island. In this IBA, the mangroves were more or less intact, with medium to large trees, extensive lagoons, and creeks. Further inland, tropical evergreen forest is found. *Pandanus andamanensium* and *P. tectorius* are seen in the creeks and lagoons.

After the earthquake and tsunami in December, 2004, the habitat here changed considerably. During this megatectonic event, the land rose more than one metre above mean sea level. This change in water level damaged most of the coastal habitats (Shirish Manchi, *pers. comm.*).

AVIFAUNA

The site is difficult to reach and requires scientific survey to identify the avifauna. However, many restricted-range species are assumed to be present in the sanctuary (R. Sankaran, *pers. comm.* 2003; K. Sivakumar, *pers. comm.* 2003). Due to very few studies having been conducted here, it is a Data Deficient site. However, its proximity to North Andaman Island and healthy mix of coastal wetlands, mangroves, and tropical forest will ensure a healthy and a much larger avifaunal community.

Apart from the tentative list (see Table), more restricted-range species are probably present in this IBA. Moreover, many endemic subspecies, which are not included in the Red Data List (BirdLife International 2001) but nevertheless



AJAI SAXENA

Andaman Coucal *Centropus andamanensis*

are vital from the conservation point of view, are also found here.

OTHER KEY FAUNA

Apart from the introduced Cheetal *Axis axis*, there is no large terrestrial wild mammal on this site. The Andaman Water Monitor *Varanus salvator andamanensis*, which can swim between the islands, has colonized this site. Lagoons and the sea around Landfall Island abound in Green Sea Turtle *Chelonia mydas* and Hawksbill Turtle *Eretmochelys imbricata*. Various corals and fish have been recorded in the seas around this IBA. Interestingly, it also attracts a

NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>

ENDEMIC BIRD AREAS 12%: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman White-headed Starling	<i>Sturnia erythropygia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>

large number of sea snakes to its coastal areas, which have numerous rocks and niches where these animals can hide. The lagoon and the other coastal habitats here were severely affected by the tectonic activities during the December, 2004 tsunami (Shirish Manchi, *pers. comm.*).

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Poaching
- Indiscriminate fishing
- Habitat destruction

Landfall is the northernmost island of the Andaman group, thus poachers and fishermen from neighbouring countries frequently come here for sea turtles and timber. The introduced Spotted Deer is also known to be a disturbance to the natural regeneration of this forest. A study should be conducted to assess the diversity of avifauna and also other fauna present on the island.

KEY CONTRIBUTORS

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LITTLE ANDAMAN

IBA Site Code	: IN-AN-10	Altitude	: Not Available
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: South Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 10° 45' 00" N, 92° 30' 00" E	Habitats	: Tropical Wet Evergreen, and Tropical
Ownership	: State		Semi-evergreen Forest, Littoral Forest,
Area	: 52,000 ha		Mangroves, Lagoons and Beaches

IN-AN-10

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Major part of the island is a Tribal Reserve.



GENERAL DESCRIPTION

Little Andaman, the southernmost of the Andaman group of islands, lies in the Andaman Archipelago in the Bay of Bengal. The major part of Little Andaman was designated as a Tribal Reserve for the Onges under the Andaman & Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956.

The major vegetation types in the island are Tropical Evergreen, Semi-evergreen, Littoral, and Mangrove Forests. The climate is hot, humid, and uniform throughout the year. The island receives rainfall from both the southwest and northeast monsoons. Maximum precipitation is between

May and December, the driest period being between January to April.

AVIFAUNA

Among the bird taxa, 34 endemics, including species and subspecies, were reported from this site (Andrews & Sankaran 2002). The Andaman Teal *Anas albogularis*, earlier considered as an endemic subspecies of the Grey Teal *A. gibberifrons*, was upgraded to full species by Rasmussen & Anderton (2005). With an estimated population between 500 and 600 (Vijayan & Sankaran 2000), it could be one of the rarest species of Anatidae in the world. During the last



Being a tribal reserve for the Onges, Little Andaman has very good tropical evergreen, semi-evergreen, littoral, and mangrove forests which harbour 34 endemic birds species and subspecies

150 years, its population has declined drastically. It used to occur in huge flocks throughout the Andaman Islands (Hume 1874, Osmaston 1906), but Vijayan & Sankaran (2000) saw only 14 birds in Little Andaman at three sites. Vijayan *et al.* (2006) in 2003–2003 recorded only three birds in Vishunala Dam of Little Andaman. They could not survey Jackson Creek where they had seen six birds in 1995–1998. More recent data are not available.

In the Endemic Bird Area 125 of (Andaman Islands) (Stattersfield *et al.* 1998), 13 restricted-range species have been listed, of which 10 have been reported from this IBA. Recently, Rasmussen & Anderton (2005, 2012) have upgraded many subspecies to full species status. For instance, earlier the subspecies of Barn Owl *Tyto alba* occurring in Andaman, which Ali & Ripley (1987) called Andaman Barn Owl *T. a. deroepstorffi*, is now treated as a full species, *Tyto deroepstorffi*. This very rare owl of the Andaman group of islands (not found in Nicobar Islands), due to its restricted distribution has to be listed in the restricted-range category of Stattersfield *et al.* (1998) and also in the Threatened category of IUCN. Another example is the Pompadour Pigeon *Treron pompadora*, of which three subspecies have been upgraded to full species. One of these is the newly upgraded species *Treron chloropterus*, named Andaman Green-pigeon. It is found in Andaman & Nicobar Islands. Andaman Green-pigeon is still common but listed

as Near Threatened by BirdLife International (2014), and in the restricted-range category as it is confined to Endemic Bird Area 125 (Andaman Islands).

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
Beach Thick-knee	<i>Esacus magnirostris</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

Another interesting example is the upgradation of two subspecies of the Great Stone Plover or Thick-knee *Esacus magnirostris* to full species as Great Stone-plover *E. recurvirostris* and Beach Stone-plover *E. magnirostris* (Dickinson 2003). Inskipp *et al.* (1996) and Grimmett *et al.* (1998) recognized Beach Stone Curlew or Thick-knee as *Esacus neglectus*. Leaving aside the classification issue, it is important to note that the Beach Thick-knee or Stone Curlew *Esacus magnirostris* was listed as Near Threatened by BirdLife International (2001). It has a wide distribution from Andaman Islands to Australia, but the range is linear along the narrow coasts. Its total population may be not more than 1,000 birds in Australia (Marchant & Higgins 1993, cited in BirdLife International 2001), but Ali & Ripley (1987) say that it is “recorded on almost every island.... Not in Nicobar”. It is very rare on and around Sumatra (BirdLife International 2001). This species is likely to be present on extensive undisturbed beaches, but no published record is available.

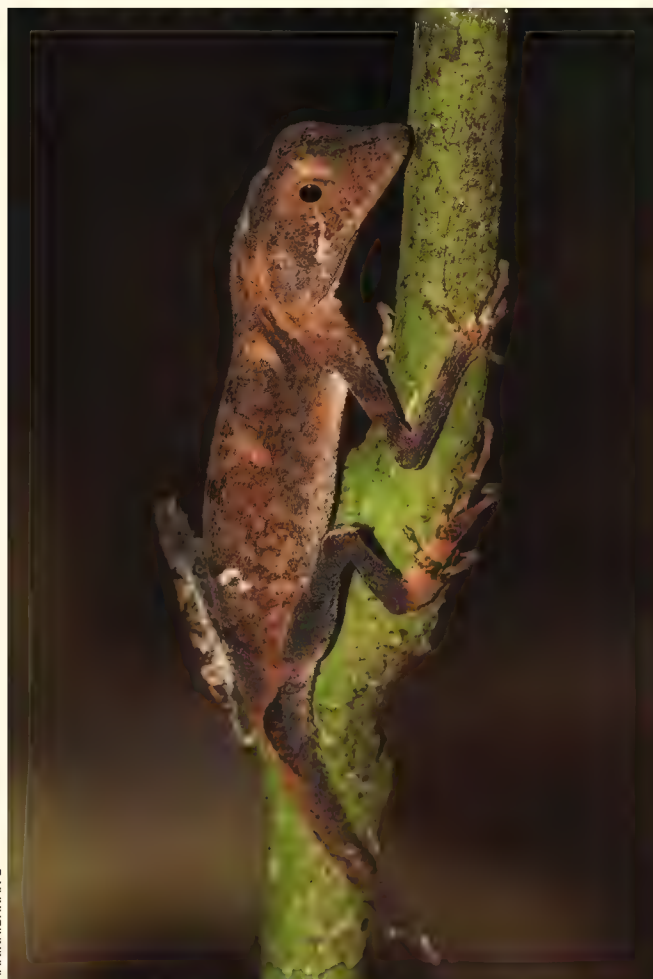
The Andaman Hawk-owl *Ninox affinis* is a rare endemic, with two subspecies in the Andaman & Nicobar Islands. The subspecies *N. affinis affinis* has been collected from Little Andaman. It is considered as Near Threatened (BirdLife International 2001). Its tolerance to disturbed habitat

gives hope that it would survive some degradation of its habitat, such as is going on in the islands due to increase in human population.

OTHER KEY FAUNA

The Giant Robber Crab *Birgus latro*, a flagship species of the invertebrate fauna of Andaman & Nicobar Islands, is reported from the site (Andrews & Sankaran 2002). Other common fauna of Little Andaman includes Wild Pig *Sus scrofa andamanensis* and the Andaman Horseshoe Bat *Rhinolophus cognatus*. The bat is totally endemic to the Andaman Islands, listed as Threatened in the 1996 IUCN Red List. It probably has a small declining population (Baillie & Groombridge 1996). Nothing has been recorded of its ecological requirements or breeding behaviour (Bates & Harrison 1997).

The reptile fauna includes the Andaman Water Monitor *Varanus salvator andamanensis* and Saltwater Crocodile *Crocodylus porosus*, Leatherback Turtle *Dermochelys coriacea*, Green Turtle *Chelonia mydas*, and Hawksbill Turtle *Eretmochelys imbricata*. 22 species of reptiles and nine species of frogs are known from the dense forests of this island, including the endemics Bay Island Forest Lizard *Coryphophylax subcristatus*, Short-tailed Forest Lizard



Short-tailed Forest Lizard *Coryphophylax brevicaudus*



Bay Island Forest Lizard *Coryphophylax subcristatus*

Coryphophylax brevicaudus, Tytler's Litter Skink *Eutropis tytleri*, and Andaman Pit Viper *Trimeresurus andersoni*. Little Andaman probably has the highest density of lizards recorded in the forests of India, averaging about 3,300 individuals per hectare (Harikrishnan *et al.* 2014).

LAND USE

- Nature conservation and research
- Agriculture and horticulture
- Tribal Reserve
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Habitat destruction through modern agricultural practices
- Indiscriminate fishing
- Poaching on both marine and terrestrial fauna
- Illegal collection of coral
- Introduction of invasive alien species
- Natural disasters such as earthquake, tsunami, storms

Due to urbanization and modern agricultural practices, wilderness habitats on this small island are getting converted into cultivated fields. The Forest and Plantation Development Corporation operates 1,591 ha of Red Oil Palm plantations close to Netaji Nagar (Andrews & Sankaran 2002). Much of the plantation covers slopes, and soil erosion has been noticed. The run-off from the plantation contains fertilizers that pollute the streams, which were clear till a few years ago. More recently, chemical fertilizers are being replaced by organic manure, but now the farmers complain that large quantities of fruit husk is being dumped into a nearby creek.

The indigenous inhabitants, the Onges, live here and their lifestyle is also changing due to the influence of mainlanders. This is affecting the wildlife conservation in this island.

According to Andrews & Sankaran (2002), the most important conservation issue for Little Andaman is conversion forestry, where natural forests are worked, commercial species extracted, and the worked forests regenerated and managed in such a manner that there is a resultant preponderance of commercial species for future harvesting. Due to this process, the site has already suffered loss of its natural profile. However, commercial tree felling has been stopped since 2002 and the Red Oil Palm plantations are to be converted back into forest.

Introduction of exotic species of animals and plants in Little Andaman has had a negative impact on forest regeneration and on local species (Andrews & Sankaran 2002). The coastal areas of the island were impacted by the 2004 mega earthquake and tsunami.

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MAHATMA GANDHI MARINE NATIONAL PARK (WANDOOR NATIONAL PARK)

IBA Site Code	: IN-AN-11	Altitude	: 0–85 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: South Andaman	Biogeographic Zone	: 12 A Islands: Andamans
Coordinates	: 11° 29' 30" N, 92° 38' 00" E	Habitats	: Tropical Wet Evergreen,
Ownership	: State		Tropical Semi-evergreen,
Area	: 28,150 ha		Littoral Forest

IN-AN-11

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : National Park, established 1983.



GENERAL DESCRIPTION

Mahatma Gandhi Marine National Park, earlier called Wandoor National Park, stretches over 15 islands and islets in the Labyrinth Island group. Its boundaries run across the coast as well as inland. The national park encompasses a stretch of marine waters, with lush vegetated islands, vast coral reefs, and beaches. Proximity to the equator ensures a hot, humid, and uniform climate (Pande *et al.* 1991). The area receives rainfall from both the southwest and northeast monsoons. Maximum precipitation is between May and December, the driest period being between January and April.

The flora is also extremely diverse, including stretches of protected mangrove forest that are among the largest in India (Pande *et al.* 1991).

AVIFAUNA

An exclusive scientific checklist of the birds of this national park is not available, but restricted-range (endemic) species are present (K. Sivakumar, *pers. comm.* 2003). There are about 177 species of birds reported from this region (Gopal & Krishnamurthy 1993). However, this list is not very reliable and we need proper study on the birds of this IBA.

DHRITIMAN MUKHERJEE



The Mahatma Gandhi Marine National Park has very high biodiversity above ground and underwater

DHRITIMAN MUKHERJEE



NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

Stattersfield *et al.* (1998) have identified 13 species from the Andaman Endemic Bird Area (EBA 125). Except for the Narcondam Hornbill *Aceros narcondami*, which is confined to Narcondam Island, and Nicobar Megapode *Megapodius nicobariensis*, which is endemic to the Nicobars, 11 of these restricted-range species are found in this IBA. Moreover, most of the endemic subspecies of the Andaman Islands are also reported from here, proving the importance of this site as an IBA. More detailed work is required to assess the importance of this site for the overall protection of birds of Andaman & Nicobar Islands.

OTHER KEY FAUNA

Andaman Wild Pig *Sus scrofa andamanensis* is the main large terrestrial native mammal and the introduced Spotted Deer or Cheetal *Axis axis* is very common on the islands. The marine fauna is immensely rich and includes four species of sea turtles, namely Olive Ridley *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill *Eretmochelys imbricata*, and Leatherback Turtle *Dermochelys coriacea*. The Dugong *Dugong dugon* and the Saltwater Crocodile *Crocodylus porosus* are also present (Pande *et al.* 1991). Fifteen species of reptiles have been recorded from this IBA site, some of them being the Andaman Giant Gecko *Gekko verreauxi*, Andaman Bent-toed Gecko *Cyrtodactylus rubidus*, Andaman Litter Skink *Eutropis andamanensis*, Andaman Cat Snake *Boiga andamanensis*, Andaman Cobra *Naja sagittifera*, and Anderson's Pit Viper *Trimeresurus andersoni* (Anon. 2001, Harikrishnan *et al.* 2014). In many islands within the national park, reptiles occur at low density due to damage to the vegetation by the introduced Spotted Deer (Mohanty *et al.* paper submitted).

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Infrastructure development
- Tourism
- Poaching and illegal fishing
- Encroachments and settlements

Proximity to Port Blair, accessibility to both Indian and foreign tourists, and a concentration of settlements along its borders have resulted in considerable disturbance to this IBA (Pande *et al.* 1991). Siltation caused by inland forestry operations in Rutland Island, which borders the park, has affected the coral reefs (Andrews & Sankaran 2002) in the past. However, since 2002, commercial logging has been banned in the A & N Islands and there is currently no logging in Rutland Island. Silt and chemical pollutants, including pesticide flow due to agriculture and horticulture activities in eastern fringes of the park, are further threats.

An Ecodevelopment Plan has been prepared by the park authorities in collaboration with SACON to involve people in conserving the park's ecosystems. An Interpretation Centre for creating awareness and imparting nature education, designed by the CEE, Ahmedabad in 2012, has also been set up by the park authorities.

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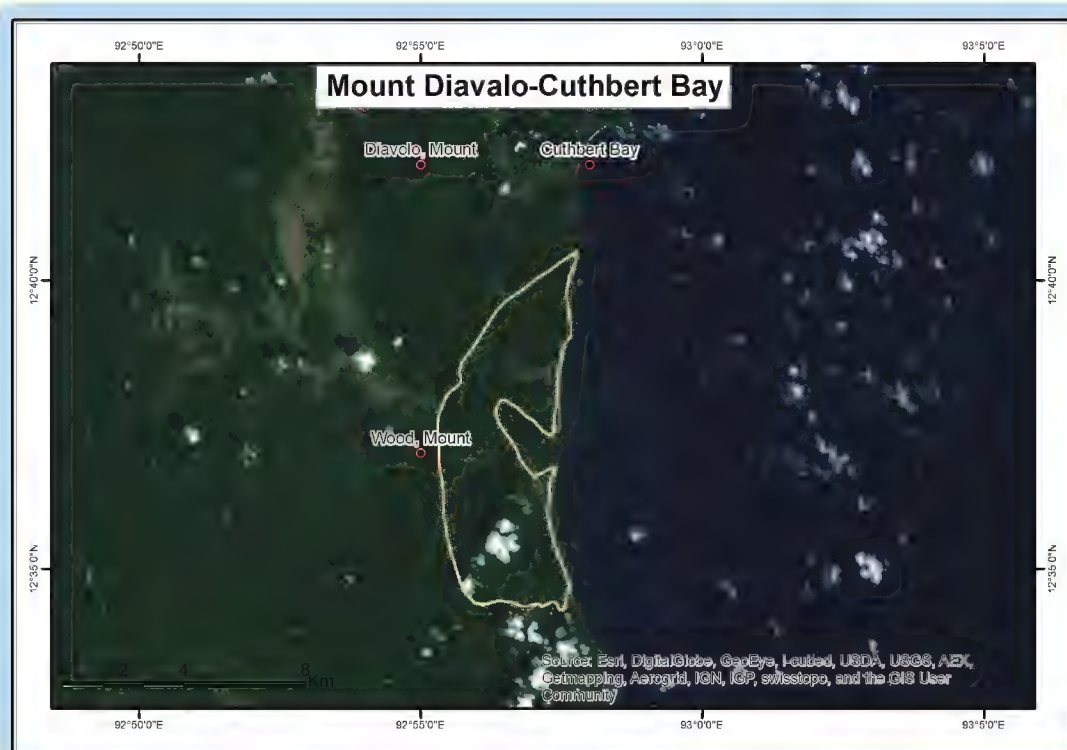
MOUNT DIAVALO-CUTHBERT BAY

IN-AN-12

IBA Site Code	: IN-AN-12	Altitude	: 0–272 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North and Middle Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 37' 00" N, 92° 55' 60" E	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: Not Available		Littoral Forest

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Coastal stretch declared as a Marine Sanctuary.



GENERAL DESCRIPTION

Mount Diavalo and Cuthbert Bay lie on the eastern coast of Middle Andaman Islands in the Bay of Bengal. These islands have a humid, tropical coastal climate. The islands receive rainfall from both the southwest and northeast monsoons. Maximum precipitation is between May and December, the driest period being between January and April. This site is covered with Tropical Wet Evergreen, Tropical Semi-evergreen, and Littoral Forest. This marine sanctuary was established to protect the turtle nesting beach at Cuthbert Bay.

AVIFAUNA

No work has been done on the avifauna of this site but as most of the forest is intact, it is extremely rich in

biodiversity. All the restricted-range (endemic) species listed by Stattersfield *et al.* (1998) for the Andaman Endemic Bird Area are found here, except for the Narcondam Hornbill *Aceros narcondami*, which has not been reported from any island of the Andaman group and is restricted to Narcondam Island, and the Nicobar Megapode *Megapodius nicobariensis* which has become extinct in the Andaman Islands. Besides the restricted-range species, many endemic subspecies of the Andaman Islands are reported from this site.

OTHER KEY FAUNA

Before the introduction of Spotted Deer or Cheetal *Axis axis*, there was no large terrestrial mammal in this area. Cheetal is now a fully acclimatized and feral species.



HARIKRISHNAN S

Charles Darwin's Frog *Ingerana charlesdarwini*

Wild Pig *Sus scrofa andamanensis* was also supposed to have been introduced by the earliest colonizers, and has evolved to merit subspecies rank. A subspecies of Himalayan Palm Civet *Paguma larvata tytleri* is another large mammal. Andaman Water Monitor *Varanus salvator andamanensis*, Bay Island Forest Lizard *Coryphophylax subcristatus*, Emerald Day Gecko *Phelsuma andamanense*, Green Bronzeback *Dendrelaphis andamanensis*, Andaman

VULNERABLE	
Andaman Teal	<i>Anas albogularis</i>
NEAR THREATENED	
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS	
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

Krait *Bungarus andamanensis*, and Andaman Pit Viper *Trimeresurus andersoni* are also reported from this IBA (S. Harikrishnan, pers. comm. 2014). In the sea around this IBA, Olive Ridley Turtle *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill Turtle *Eretmochelys imbricata*, and Leatherback Turtle *Dermochelys coriacea* are found.



DHRITIMAN MUKHERJEE

Besides harbouring endemic and globally threatened bird species, IBAs such as Mount Diavalo and Cuthbert Bay give refuge to many endemic frog species



Andaman Water Monitor *Varanus salvator andamanensis*

Cuthbert Bay is a major turtle nesting beach in Andaman Nicobar, and nesting turtles are provided protection in the sanctuary. The eggs are shifted to a nursery located on the beach for greater protection.

LAND USE

- Nature conservation and research
- Ecotourism

THREATS AND CONSERVATION ISSUES

- Encroachments
- Road construction
- Introduced alien species
- Poaching and illegal fishing

Poaching of birds, Andaman Wild Pig, and Cheetal is common. Complete removal of Cheetal may not be possible,

but its population needs to be curbed to allow natural regeneration of the forest. The forests of Andaman Islands evolved without any large herbivore, therefore the long-term impact of Cheetal would be very harmful (Rauf Ali, *pers. comm.* 2003). The 2004 tsunami devastated the turtle nesting site, but protection over the years with the number of turtles coming to lay eggs and hatchlings being released is steadily increasing.

KEY CONTRIBUTORS

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KEY REFERENCE

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MOUNT HARRIET NATIONAL PARK

IBA Site Code	: IN-AN-13	Altitude	: 0–481 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 19 °C to 33 °C
District	: South Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 11° 49' 58" N, 92° 46' 35" E	Habitats	: Tropical Wet Evergreen,
Ownership	: State		Tropical Semi-evergreen,
Area	: 4,662 ha		Littoral Forest

IN-AN-13

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : National Park, established 1987.

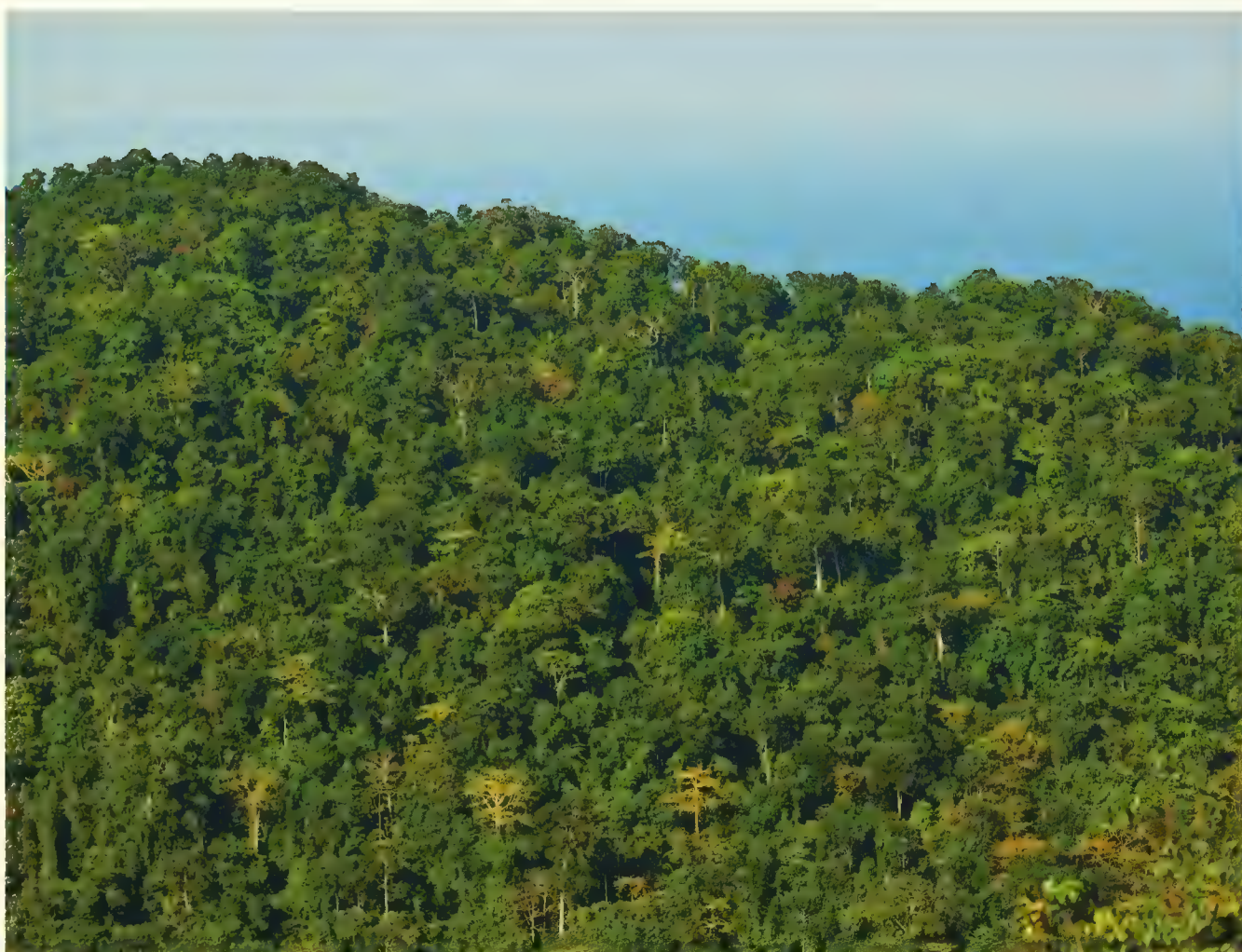


GENERAL DESCRIPTION

Mount Harriet National Park is situated in Ferrargunj *tehsil* of South Andaman district, c. 38 km from Port Blair. The area of the national park is c. 4,662 ha and there is a proposal to extend it by another 1,700 ha to include the adjacent hill ranges to the south, to conserve the marine ecosystem along the eastern coast. The park contains hill ranges, which generally lie in the north-south direction. From these, numerous spurs and ridges branch out east and west. The hills are steeper on the eastern side. The beaches on the eastern coast are generally rocky, with a few sandy patches. The park also has freshwater streams, originating from the hill ranges and draining into the sea on the east

coast. The climate is hot, humid, and uniform throughout the year. Fortunately, the forest is largely untouched (Pande *et al.* 1991).

Mount Harriet National Park is one of the few pristine areas within the Andaman Archipelago where almost all the major groups of animals characteristic of tropical forests are well represented. The terrestrial fauna of the national park shows affinities with that of Myanmar and Indo-China (Chandra & Rajan 2004). The avifauna is very rich and diverse due to dense forests, the presence of many varieties of wild fruit plants, and open seashore on the eastern side. The area was earlier a reserve forest, so some sort of protection was given.



A view of Mount Harriet and Shoal Bay

Now, having become a national park, the forest is totally protected.

The major forest types in Mt Harriet National Park include Evergreen Forest, Andaman Tropical Evergreen Forest, Andaman Semi-evergreen Forest, Andaman Moist Deciduous Forest, and Littoral Forest. Balachandran (1998) reported 134 plant and tree species, of which 74 are native and 51 introduced. The main tree species are *Albizia lebbbeck*, *A. procera*, *Dipterocarpus grandiflorus*, *Ficus glomerata*, *F. hispida*, *Lagerstroemia hypoleuca*, *Lannea* spp., *Mesua ferrea*, *Terminalia bialata*, and *T. procera*.

AVIFAUNA

A total of 214 species and subspecies of birds, including 63 endemics, have been recorded earlier from Andaman Islands, but in Mt Harriet NP, only 86 species are known to occur. Of these, 48 species and subspecies are endemic to the Andaman group. Chandra & Rajan (1996) have listed 86 species from this site, but their report is somewhat unreliable, as they have referred to many widely distributed migratory species as endemic. For example, they consider Little Bunting *Emberiza pusilla* as endemic, although it is

found in the Himalaya, the Northeast, and Bangladesh (Ali & Ripley 1987, Grimmett *et al.* 1998).

The Andaman Crake *Rallina canningi* was supposed to be common in Mount Harriet NP according to Chandra & Rajan (1996), although they had sightings only from two localities (Vijayan & Sankaran 2000). It is Near Threatened as it has a small population and narrow range of distribution (BirdLife International 2001). The Andaman Hawk Owl *Ninox affinis*, a Near Threatened species, is also considered common in this IBA by Chandra & Rajan (1996), but Vijayan (1999) found it to be one of the rarest endemics of Andaman Island.

After upgradation of many subspecies to species level (Rasmussen & Anderton 2005, 2012; del Hoyo & Collar 2014), and reassessment of their status, 23 globally Threatened and Near Threatened species are found in the Andaman & Nicobar group of islands. Nine Near Threatened species are found in this IBA but more are likely to be present if proper surveys are done. Stattersfield *et al.* (1998) had identified 13 restricted-range species for EA 125, out of which 11 are found here. With recent classification, there are now more restricted-range species in these islands.

NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

OTHER KEY FAUNA

The mammalian fauna of Mt Harriet National Park is represented by 12 species, including the Andaman Wild Pig *Sus scrofa andamanensis*, Andaman Masked Palm Civet *Paguma larvata tytleri*, Andaman Rat *Rattus rattus andamanensis*, and Flying Fox *Pteropus melanotus*. Cheetal *Axis axis* were introduced by the British and now feral populations are found. The reptilian fauna of the national park is exceptionally rich, and includes mainly lizards and snakes. In all, 33 species have been recorded, of which 17 are endemic to Andaman & Nicobar Is. (Harikrishnan *et al.* 2014). The amphibian fauna comprises eight species, of which two species Andaman Bull Frog *Kaloula baleata ghoshi* and Andaman Paddyfield Frog *Limnonectes andamanensis* are endemic to Andaman Is. The endemic Andaman Tree-hole Frog *Ingerana charlesdarwini* was discovered for the first time in Mt Harriet National Park. Recently, a new species of endemic Agamid lizard, Short-tailed Forest Lizard *Coryphophylax brevicaudus* was discovered from this IBA (Harikrishnan *et al.* 2012). The rare Andaman Canopy Agama *Pseudocalotes andamanensis*, which was known from a single specimen collected in the 19th century, was also rediscovered from Mt Harriet National Park (Harikrishnan & Vasudevan 2013). Freshwater fishes in the streams in Mt Harriet NP are represented by 16 species, mainly eels, catfish, gobies, sleepers, and snakeheads. The land molluscs are not well studied, and only six species have been recorded. Among the invertebrates, insects contribute about 70% of the faunal diversity. So far, 355 species have


 Endemic Andaman Serpent-eagle *Spilornis elgini*

DHIRTIMAN MUKHERJEE

IN-AN-13

been reported, which include 79 endemic species (Chandra & Rajan 2004).

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Poaching
- Human settlements
- Urbanization in nearby Port Blair

The easy availability of fresh water and the fertile valleys of the hill range have attracted many settlements around the national park (Andrews & Sankaran 2002). Settlers also constantly extend their boundaries, encroaching into forest land and harvesting the reserve forest illegally for timber and other forest produce (Andrews & Sankaran 2002). On the hill slopes bordering the park, land is being encroached and converted to areca and coconut plantations (Singh 1997, quoted in Andrews & Sankaran 2002). As a result, the national park has no buffer zone. A number of industries, including quarries, plantations, and plywood factories, have

sprung up in the immediate surroundings (Singh 1997). The plywood factory has since been closed down, after a ban on commercial forestry in 2002.

The population of Andaman Wild Pig has declined in the vicinity of the national park due to hunting and poaching.

Sea turtles such as the Green Turtle *Chelonia mydas*, Hawksbill *Eretmochelys imbricata*, and Olive Ridley Turtle *Lepidochelys olivacea* visit the sandy beaches during the nesting season for egg laying. Their eggs are excavated by human settlers for food. Hunting of birds is also reported. The Andaman Wood-pigeon *Columba palumboides*, Red Turtle-dove *Streptopelia tranquebarica*, Emerald Dove *Chalcophaps indica*, and White-breasted Waterhen *Amaurornis phoenicurus* are the main targets of poachers. Strict enforcement of the Indian Wildlife (Protection) Act, 1972 is of utmost importance to conserve the turtles, Andaman Wild Pig, and other biodiversity.

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NARCONDAM ISLAND WILDLIFE SANCTUARY

IBA Site Code	: IN-AN-14	Altitude	: 0–706 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 13° 27' 53" N, 94° 16' 41" E	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: 681 ha		Littoral Forest on Volcanic Formation

IN-AN-14

IBA CRITERIA : A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Wildlife Sanctuary, established in February 1977.



GENERAL DESCRIPTION

Narcondam is a very small (681 ha) volcanic island, located about 140 km east of the nearest inhabited island Diglipur in the North Andaman group. The island is of volcanic origin and rises steeply to a central peak of 706 m which is the second highest peak in the Andaman & Nicobar Islands, after Saddle Peak in North Andaman Island. It is almost entirely covered with Evergreen and Moist Deciduous forest. Grassy slopes dominate the southern and southeast aspects of the hill (BirdLife International 2001).

The island was notified as a sanctuary to protect the globally Threatened and endemic Narcondam Hornbill *Aceros narcondami*, which is restricted to this tiny island.

As Narcondam Island is remote and difficult to reach, there have been few visits by ornithologists to date: Osmaston (1905), Baker (1927), Abdulali (1971, 1974), Hussain (1984), Vijayan & Sankaran (2000), Yahya & Zarri (2000, 2002a), and Raman *et al.* (2013).

The island is covered with Tropical Evergreen forest, Semi-evergreen forest, Moist Deciduous forest, Littoral forest, and some patches of Mangrove forest (Pande *et al.* 1991). The island bears old, dead, and decaying trees, interlaced with thorny creepers and luxuriantly flowering tall trees (Yahya & Zarri 2002a). The flora on the higher reaches of the hill is mostly evergreen and consists of *Dipterocarpus*, *Sideroxylon*, and *Ficus* trees. However,



Narcondam Island is mostly covered with tropical evergreen forest

some deciduous species such as *Bombax insigne* are also present. The vegetation towards the summit is mostly Moist Evergreen with several epiphytes. The lower hills following the shoreline have both deciduous and evergreen trees such as *Terminalia catappa*, *T. bialata*, and *Caryota mitis*. The shoreline has some introduced species such as Coconut and Banana.

AVIFAUNA

Narcondam Island has the distinction of being the sole area of distribution of the Narcondam Hornbill, which has one of the smallest natural ranges of any bird species in the world (BirdLife International 2001). Thus it a high priority species for conservation. Hussain (1984) estimated a population of more than 400 birds, while Ravi Sankaran estimated the total to be around 330–360 birds. However, based on systematic line transect methods, Yahya & Zarri (2002a) estimated 432 birds, with an approximate density of 72 birds/sq. km. During a recent survey in 2013, the population of the Narcondam Hornbill was estimated to be close to 900 birds (Anon. 2014). Flocks of up to 50 birds have also been reported congregating on fruiting figs on this island (Yahya & Zarri 2002a). Vijayan & Sankaran (2000) found that these hornbills were not distributed evenly. Higher densities were seen along the ridge that bisects the island and low densities were seen in the northern part of the island. This could be due to differences in availability of fruiting trees during the study period. Details of ecology and

behaviour are given by Hussain (1984), Vijayan & Sankaran (2000), and Yahya & Zarri (2002a).

The Andaman Scops-owl *Otus balli* is the other Near Threatened and restricted-range bird species present on the island.

Yahya & Zarri (2000b) recorded 22 species during their one-month survey, including a sighting of 11 Fairy Tern *Gygis alba*. A specimen collected over a hundred years ago in the Bay of Bengal is the only record of this bird within Indian limits (Ali & Ripley 1987). During a recent visit to the island in 2012 and 2013, a total of 41 bird species were observed (S. Manchi, *pers. comm.* 2014). Recently, species like the Blue-winged Pitta *Pitta moluccensis* and Grey-faced Buzzard *Butastur indicus* were recorded as new additions to South Asian avifauna from Narcondam Island by Manchi & Kumar (2014) and Manchi *et al.* (2014). An unidentified Frigatebird was also photographed from the northeastern coast of the island (S. Manchi, *pers. comm.*)

OTHER KEY FAUNA

As Narcondam is a tiny volcanic island, not connected to

ENDANGERED

Narcondam Hornbill	<i>Rhyticeros narcondami</i>
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ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Scops-owl	<i>Otus balli</i>
Andaman Nightjar	<i>Caprimulgus andamanensis</i>
Narcondam Hornbill	<i>Rhyticeros narcondami</i>

any land mass, large-sized terrestrial native mammalian fauna is absent. However, the Nicobar Flying Fox *Pteropus faunulus*, Narcondam Small Flying Fox *Pteropus hypomelanus*, and the Indochinese Forest Rat *Rattus andamanensis* are the most common mammals on this island. The introduced domestic Goat *Capra hircus*, which were removed from the island in early 2000, were not sighted in recent expeditions to the island. During a recent assessment, no direct or indirect evidence of the presence of domestic goats was seen on the island (Anon. 2014)

Nine species of reptiles have been recorded from Narcondam (Raman *et al.* 2013). Anderson's Day Gecko *Cnemaspis andersoni* was described from Narcondam Island and it is unclear whether the populations in other islands belong to this species (S. Harikrishnan, *pers. comm.* 2014). The Paradise Tree Snake *Chrysopelea paradisi* occurs in Narcondam Island, and this is its only location within Indian limits. The Andaman Day Gecko *Phelsuma andamanense* is also restricted in distribution to the Andaman group (Daniel 2002). Recently, a cat snake, probably Green Cat Snake *Boiga cyanea*, was photographed but the identification has not been confirmed. If confirmed, this will be the first record of the species from the Andaman group of islands (S. Manchi, *pers. comm.* 2014). The Yellow-lipped Sea Krait *Laticauda colubrina*, confined to the Bay of Bengal and Nicobar Islands is seen here. The Andaman Water Monitor *Varanus salvator andamanensis* is the only large predator on the island and is a threat to the Narcondam Hornbill, especially its young.

LAND USE

- Nature conservation and research
- Police outpost
- Plantation

THREATS AND CONSERVATION ISSUES

- Increase in human habitations
- Natural disasters
- Firewood collection
- Selective logging/cutting

The Narcondam Hornbill is the only Threatened bird species in India that is entirely restricted to the Andaman Islands Endemic Bird Area. Constrained by the limits of its island home, its range and population size are threats in themselves. The population is constantly susceptible to stochastic events such as natural disasters. Primary threats arise from the establishment of a police outpost on the island in 1969. The police personnel introduced several pairs of goats, which by 1998 had grown to a population of 130–150 in the police camp and over 250 free-ranging goats at large on the island, which were impacting the natural regeneration of local vegetation. About 50 acres of forest have been lost to the police camp and adjacent plantation of fruit trees and vegetable plots, and a little more in the environs has been degraded. Regular cyclones destroy many older trees which have suitable nesting cavities, and cutting of large old trees is likely to have a detrimental impact on the island's hornbill population. Until very recently, the police



The Narcondam Hornbill, male (left) female (right) has perhaps the smallest distribution of any bird in India. It is confined to the 681 ha Narcondam Island

staff hunted Narcondam Hornbill for meat, but this has more or less stopped now. There is also a sizeable population of domestic and feral cats on the island, although whether they prey on the hornbills is not known. The goats have since been removed by the Police Department in a special operation in the early 2000s. Perhaps a few remain, but no concrete signs of their presence have been found in recent years. Similarly, cats have also been removed over the years. In 2010, a few live chickens were seen at the police camps, which were also removed on the intervention of the Department of Environment & Forests. Further, developmental plans on the island may increase pressure on the island resources. As Narcondam has only one known water source, which is already used by the policemen living on the island, it is essential to recognize the effects of further pressure on the island resources.

It was earlier suggested that a second population of the Narcondam Hornbill might be established on another suitable island in the Andamans, as a backup measure in case of serious population decline or natural disasters. Before any such action is taken, an ecological appraisal of the recipient island should be undertaken to estimate which species the hornbill would compete with for nesting sites and food (BirdLife International 2001). However, the proposal has been rejected on ecological grounds. There is, however, a plan of captive breeding of Narcondam Hornbill for conservation purposes in the Biological Park at Chidiyatapu, South Andamans, during its second phase of development, which has been approved by the Central Zoo Authority.

Recently, Government of India has proposed this site as a UNESCO World Heritage Natural Site.

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NORTH & SOUTH SENTINEL ISLANDS

IBA Site Code : IN-AN-15

Administrative Region : Andaman & Nicobar Islands
(Union Territory)

District : South Andaman

Coordinates : 10° 58' 12" N, 92° 13' 29"E

Ownership : State

Area : 4,861 ha

Altitude : 0–40 msl

Rainfall : 3,500 mm

Temperature : 20 °C to 32 °C

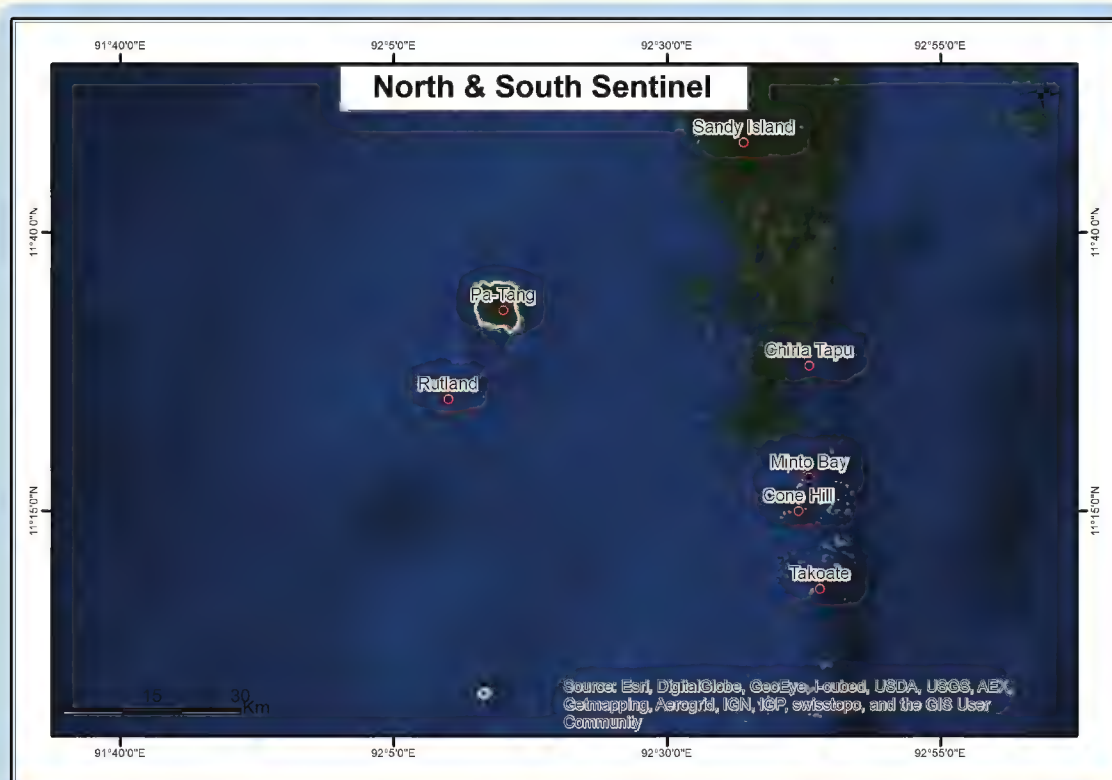
Biogeographic Zone : 12A Islands: Andamans

Habitats : Tropical Wet Evergreen Forest,
Tropical Semi-evergreen Forest,
Littoral Forest

IN-AN-15

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : South Sentinel Wildlife Sanctuary, established February 1977.
North Sentinel is a Tribal Reserve with stricter protection.



GENERAL DESCRIPTION

North Sentinel is a 4,700 ha island, a true coral atoll, that lies west of the Wandoor National Park (Mahatma Gandhi Marine National Park), while South Sentinel covers only 161 ha, located further south. The Sentinelese, an indigenous Negrito tribe, inhabit North Sentinel, which is completely isolated from the rest of the world. They are the sole inhabitants of the island and successfully retain and defend their traditional lifestyle and pristine territory. They vigorously repel any attempt made by government teams or others to communicate with them, by aggressively attacking intruders in their territory (Gandhi 2000).

A 5 km no fishing zone has been declared around this island to accord higher protection.

South Sentinel Island is a small flat, coral island, where lagoons mark about half the length of the shore, the rest being rocky or sandy. The whole island, with the exception of a 36 ha swamp, is covered with dense Andaman Tropical Evergreen forest, which extends about 75 ha, consisting mainly of Sea Mohwa *Manilkara littoralis*, with an undergrowth of various smaller trees and shrubs. There is a well-defined sea fence, consisting of Screw Pine *Pandanus* and *Hibiscus*. Littoral Forest is spread over 50 ha along the shore (Osmaston 1908, Sekhsaria 2000).

South Sentinel Island has been visited by many people but there is no permanent habitation, save the light house, as there is no source of fresh water on this small island. It was declared as a sanctuary in 1997, primarily to protect the Giant Robber Crab *Birgus latrao* for which South Sentinel is the last stronghold in the Andamans. Every year, during March, thousands of Pied Imperial-pigeon *Ducula aenea* come from the South and Little Andaman Islands to nest in South Sentinel. This IBA is also very important as a nesting habitat of the Green Turtle *Chelonia mydas*. It is surrounded by spectacular intertidal coral reefs, reef slopes and shelves, all of which are extensive and need to be assessed, according to Bhaskar (1993) and Andrews (1997), quoted in Andrews & Sankaran (2002).

The forest is more or less intact in North Sentinel as modern man has not yet reached there, with his chainsaws and concept of “sustainable harvest”. As the Sentinelese have successfully deterred outsiders, the biodiversity of this island has not been studied or recorded. North Sentinel is covered by dense tropical rain forests. It is evident that the forest and surrounding coast, which the tribals have protected for centuries, provide all their living requirements.

AVIFAUNA

Not much is known about the birdlife of North Sentinel Island as the tribals resist the entry of outsiders, but South Sentinel has been visited by many naturalists and birdwatchers. Osmaston (1908) visited it in 1907 to study the Pied Imperial Pigeon and Nicobar Pigeon *Caloenas*

nicobarica. The former still nests in huge numbers all over the island, and the latter in small numbers. Before upgradation of many species in to full species by Rasmussen & Anderton (2005, 2012) and del Hoyo & Collar (2014), Stattersfield *et al.* (1998) had identified 13 restricted-range species from Andaman Island (Endemic Bird Area 125). It is estimated that South Sentinel has at least 11 restricted-range species, nine of which are Near Threatened.

In South Sentinel, one pair of White-bellied Sea-eagle *Haliaeetus leucogaster* has become an almost permanent feature.

OTHER KEY FAUNA

As mentioned earlier, North Sentinel has not been explored and we do not have any information on its fauna, but it is supposed to be largely intact, as the tribals sustainably harvest their needs. On South Sentinel, one of the flagship invertebrate species of the Andaman & Nicobar Islands, the Giant Robber Crab, is found in large numbers. It is nocturnal and spends the day time in large hollows of old Sea Mohwa trees, which are the dominant trees of the island.

Green Sea Turtle *Chelonia mydas* breeds on the long sea beach of South Sentinel (Sekhsaria 2000). Earlier, they used to “swarm round the island, coming on shore in the evening to lay their eggs”, but now the population is not so large, at least around South Sentinel, due to extensive poaching by fishing trawlers (Andrews *et al.* 2001). The Leatherback Turtle *Dermochelys coriacea* also occurs, but in smaller numbers. Saltwater Crocodile *Crocodylus porosus* and Andaman Water Monitor *Varanus salvator andamanensis* are supposed to be common on both islands. The Andaman Emerald Gecko *Phelsuma andamanense*, also called Andaman Day Gecko, is active during the day, unlike most other geckos which are nocturnal. It has a peculiar distribution, being found not in mainland Asia but in the oceanic islands of Mauritius, Seychelles, Reunion, and Madagascar (Daniel 2002). There is no indigenous terrestrial mammal, except the endemic Andaman Horseshoe Bat *Rhinolophus cognatus*.

NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crake	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropgia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

LAND USE

- Nature conservation
- Traditional fishing
- Hunting and gathering by tribals

THREATS AND CONSERVATION ISSUES

There have been repeated attempts by the Government to make contact with the Sentinelese to ‘civilize them’ but till now they have not succeeded. However, all attempts to make contact have been stopped by the Island Administration as a policy, so that these tribals can live in peace. Greater protection is now provided to the tribe by maintaining a 5



PANKAJ SEKHSERIA

South Sentinel Island was declared a sanctuary in 1997, primarily to protect the Giant Robber Crab *Birgus latro*

km no fishing buffer zone around the island, where fishing by settlers from the main islands is not permitted. Based on the experiences of other such islands and 'primitive' people, the impact on nature would not be positive if the Sentinelese are brought into the so-called mainstream. Presently, the Sentinelese manage to subsist on forest produce, harvesting it sustainably mainly because of their small population and by the use of primitive hunting methods and tools.

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NORTH REEF ISLAND WILDLIFE SANCTUARY

IN-AN-16

IBA Site Code	: IN-AN-16	Altitude	: 0–27 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North and Middle Andaman	Biogeographic Zone	: 12A Islands: Andaman
Coordinates	: 09° 28' 21" N, 92° 42' 41" E	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: 348 ha		Littoral Forest

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : Wildlife Sanctuary, established in February 1977.



GENERAL DESCRIPTION

The North Reef Island Wildlife Sanctuary measures 348 ha and is located in the Andaman Archipelago. North Reef Island is among the most beautiful islands in the Andamans and has one of the best beaches, with fine white sand, which stretches far into the sea, with beautiful coral formations (Pande *et al.* 1991). North Reef, along with Interview Island, has one of the richest coral reef formations in the Andaman & Nicobar group, with associated molluscs such as *Trochus* and other shells, and Holothurians (Andrews & Sankaran 2002).

The forest types include Andaman Evergreen, Andaman Semi-evergreen, Tidal Mangrove, and Littoral Forests.

The major tree species are *Dipterocarpus* sp., *Ficus retusa*, *Manilkara littoralis*, *Pongamia pinnata*, *Terminalia bialata*, *Mesua* sp., and *Bombax ceiba* (Pande *et al.* 1991). The mangrove forest is dominated by species of *Rhizophora*.

AVIFAUNA

North Reef Island is among the large refugia for the endemic Andaman Teal *Anas albogularis*. With an estimated population between 600 and 700 (Vijayan *et al.* 2006), it could be one of the rarest Anatidae in the world. It used to occur in huge flocks throughout the Andaman Islands (Hume 1874, Osmaston 1906). But in the last 150 years, its population has drastically declined. In North Reef Island

Wildlife Sanctuary, Vijayan & Sankaran (2000) recorded 33 individuals in 1995–1996, but in 1998 only three were seen. The reeds on the edges of the wetland which were preferred for nesting had dried up, probably owing to the breach of a bund and ingress of sea water into the wetland. It is obvious that the current status of Andaman Teal is fragile. Three endemic and Near Threatened species have been reported till now, but proper survey may reveal some more species.

Stattersfield *et al.* (1998) identified 13 extant species as endemic to the Andaman Islands Endemic Bird Area. Five of these species have been reported from this IBA but more are likely to be found (K. Sivakumar, *pers. comm.* 2003).

VULNERABLE	
Andaman Teal	<i>Anas albogularis</i>
NEAR THREATENED	
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Beach Thick-knee	<i>Esacus magnirostris</i>
ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS	
Andaman Teal	<i>Anas albogularis</i>
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Beach Thick-knee	<i>Esacus magnirostris</i>

OTHER KEY FAUNA

The commonly seen fauna of the site are Andaman Wild Pig *Sus scrofa andamanensis*, Salt Water Crocodile *Crocodylus porosus*, Andaman Water Monitor *Varanus salvator andamanensis*, and Green Turtle *Chelonia mydas*.

The island has rich coral formations with associated species such as sea cucumbers and molluscan shells. Saltwater crocodile and marine turtles nest on the beaches (Gandhi 2000).

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Timber collection
- Poaching

The island has no permanent human settlement. Though it is legally protected as a wildlife sanctuary, uncontrolled collection of timber, sea cucumbers, shells, and corals is rampant. Crocodiles are being hunted by poachers from Myanmar, Thailand, and other Southeast Asian countries, who pose the greatest threat to these islands. Rodgers & Panwar (1988) proposed that North Reef Island should be upgraded to the status of a national park. The freshwater wetland has diminished over the years, which earlier had prime habitats for Andaman Teal and Salt Water Crocodile.



GARIMA BHATIA

North Reef Island is one of last refuges for the endemic Andaman Teal



PANKAJ SEKHSARIA

Beach Thick-knee *Esacus magnirostris* is widely distributed on suitable beach habitats in the Andamans and other islands of South Asia, but nowhere is it common

The island reefs were extensively damaged during the 2004 mega earthquake and tsunami.

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RANI JHANSI MARINE NATIONAL PARK

IBA Site Code	: IN-AN-17	Altitude	: 0–70 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: South Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 12° 15' 00" N, 93° 04' 60" E	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: 25,614 ha		Mangrove Forest

IN-AN-17

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : M Park, established 1996.



GENERAL DESCRIPTION

Rani Jhansi Marine National Park lies within Ritchie's Archipelago, 14 km northeast of South Andaman Island and southeast of Middle Andaman Island. This archipelago includes the islands of North, Middle, and South Button (notified as national parks), Outram, Henry Lawrence, Inglis, John Lawrence, Wilson, Nicholson, Peel, Havelock, Neill, and the southernmost, Sir Hugh Rose (notified as a sanctuary in 1987). Of these islands, Outram (1,900 ha), Henry Lawrence (6,563 ha), and John Lawrence (4,200 ha) form the Rani Jhansi Marine National Park. The park has a total area of 25,614 ha, of which 12,770 ha comprises land and the rest is a marine ecosystem surrounding these three islands (Andrews 2000).

The natural habitats of the park include lagoons, coral

reefs, beaches, lowland evergreen rain forest, semi-evergreen rain forest, and mangrove forests.

Like all other coastal/island IBA sites, this site also has humid, tropical coastal climate, due to its proximity to the sea. Rainfall is very heavy, up to 3,500 mm annual average, due to the southwest and northeast monsoons. There are only four comparatively dry months, January to April.

This site still has some intact tropical evergreen and semi-evergreen forests, mangrove forests, and extensive coastal lagoons. The park was established to protect marine life, especially corals, fish, and turtles. A complete biodiversity inventory of this park has not been done.

AVIFAUNA

Detailed studies on the avifauna have not been conducted

till now, but based on the preliminary works of Das (1998) and Deb (1998), a checklist of 58 birds is available. However, this list is not very reliable and we need accurate studies on the birds of this IBA. Nevertheless, 13 endemic species of the Andaman Islands have been reported here. The presence of 13 endemic species in this IBA proves its conservation value.

The Andaman Teal *Anas albogularis*, earlier considered as an endemic subspecies of the Grey Teal *A. gibberifrons*, is now listed as a full species by Rasmussen & Anderton (2012). With an estimated population between 600 to 700 (Vijayan *et al.* 2006), it could be one of the rarest birds of India. In Ritchie's Archipelago, it was observed on three locations: Outram Island in the south creek, Kawangtung Strait between Henry Lawrence and John Lawrence, and Havelock No. 5 (Andrews 2000). More than 100 Andaman Teal were reported on John Lawrence Island during the wet season in a freshwater stream on the northeastern side of this island, where the sea enters the stream during spring tides. This could be the largest recorded flock of this extremely rare bird. However, according to R. Sankaran (*pers. comm.*), the population of this rare species is underestimated and secondly, during the non-breeding season, Andaman Teal congregate, so sighting more than 100 birds could be incidental.

VULNERABLE

Andaman Teal	<i>Anas albogularis</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Pilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgesi</i>
Andaman Drongo	<i>icrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>
Andaman Crane	<i>Rallina canningi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Teal	<i>Anas albogularis</i>
Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgesi</i>
White-headed Starling	<i>Sturnus erythropygius</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>



Rani Jhansi Marine National Park is well known for its rich and beautiful marine life

OTHER KEY FAUNA

Rani Jhansi Park is considered rich in faunal diversity, as 45 reptiles, 12 amphibians, and 21 mammal species have been reported here (Das 1998, quoted in Andrews & Sankaran 2002). The seagrass beds provide an ideal habitat for Dugong *Dugong dugon*. Some of the endemic species of reptiles are Daniel's Forest Lizard *Bronchocela danieli* (Endangered) and Andaman Island Grass Skink *Mabuya andamanensis* (Vulnerable) (Anon. 2001). The park has a resident population of Salt Water Crocodile *Crocodylus porosus*. Andaman Water Monitor *Varanus salvator andamanensis* is quite common in creeks and forest. Four species of sea turtles are found, namely the Olive Ridley *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill Turtle *Eretmochelys imbricata*, and Leatherback Turtle *Dermochelys coriacea*. Over 80 species of corals are reported from just one part of the park.

The coral reef fauna is extremely rich. Mustafa *et al.* (1987) have described the coral reefs and coral fish and the damage due to siltation, improper fishing methods, and logging activities.

As listed by Sankaran (1998) and Manchi (2014), 48 limestone caves (coastal and inland) are known from the park. Caves are known to be dynamic, closed systems with the specific fauna. This adds to the conservation importance of the park. These caves are known to have breeding populations of the Edible-nest Swiftlet *Aerodramus fuciphagus*. No specific studies have been conducted on the cave fauna here.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Fishing
- Illegal tree felling

This park is easy to access from Port Blair for both Indian and foreign tourists. Tourism has increased immensely in the last decade on the adjacent Havelock Island and indiscriminate fishing in this area has resulted in considerable disturbance. Some amount of domestic waste is disposed of in this part of the sea that could be harmful to corals and associated fauna.

Wimco (a corporation) and the Andaman Timber Industries carried out timber extraction in the three main islands during the 1960s and 1970s (Andrews 2000). Timber extraction by the Forest Department continued till it was stopped by an order of the Supreme Court in 2002.

Overfishing of reef fish for export is taking a heavy toll on the reefs, apart from diving for shells and collection of sea cucumber (Mustafa *et al.* 1987, Andrews 2000).

North, Middle, and South Button, Inglis, Wilson, and Nicholson Island should be included in this park, prior to the final notification (Andrews 2000). A species monitoring programme for endangered flora and fauna should be initiated and based on research findings, a management plan should be developed. Islanders of Havelock and Neill could be trained as guides and boatmen for tourists. Mechanism to provide basic biomass needs to the local people should be incorporated in the management plan. A proposal is under consideration to increase the park area by including the nearby three Button National Parks and Inglis Sanctuary.

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SADDLE PEAK NATIONAL PARK

IN-AN-18

IBA Site Code	: IN-AN-18	Altitude	: 0–739 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,800 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: North and Middle Andaman	Biogeographic Zone	: 12A Islands: Andamans
Coordinates	: 13° 10' 54" N, 93° 01' 35" E.	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: 3,254 ha		Mangrove Forest

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS : National Park, established 1987.



GENERAL DESCRIPTION

Saddle Peak National Park is situated around Saddle Peak (737 msl), the highest point in the Andaman & Nicobar Islands. The peak is shaped like a double-humped saddle, hence the name. The national park runs north to south along the eastern coast of North Andaman Island. Most of the eastern boundary of the national park borders the sea, with a long and rocky beach. The park also has a freshwater pool, from which water is piped to Diglipur (Pande *et al.* 1991). Though they were logged in the past, the park's littoral and evergreen forests are thick and luxuriant. There are 10 perennial streams and 132 seasonal streams inside the national park. Kalimpong river, the only river in

the Andaman Islands, originates in the national park, and the only hydro-electric power station in these islands was constructed by damming the river.

Forest types include Andaman Tropical Evergreen, Andaman Moist Deciduous, Andaman Semi-evergreen, Cane Brake, Wet Bamboo, and Littoral. The main floral species are *Cratoxylum cochinchinense*, *Diospyros marmota*, *Dipterocarpus costatus*, and the endemic *Euphorbia epiphylloides*.

AVIFAUNA

A detailed checklist of birds is not available, but 11 out of 13 restricted-range species (identified from this Endemic

Bird Area by Stattersfield *et al.* 1998) are known to occur in this IBA. The list of restricted-range species has increased as some subspecies have been upgraded by Rasmussen & Anderton (2005, 2012), such as Andaman Green-pigeon *Treron chloropterus*. Andaman Crane *Rallina canningi* is now listed by BirdLife International (2014) as Near Threatened. Earlier it was considered Data Deficient. Another bird of great conservation concern is the Andaman Teal *Anas albogularis*. Earlier it was considered only a subspecies of Grey Teal *Anas gibberifrons*, therefore it was not listed by BirdLife International (2001) in their *Red Data Book*. But recently, Rasmussen & Anderton (2005, 2012) have given it full species status. It is an extremely rare species and endemic to the Andaman Islands, it is now listed as Vulnerable by BirdLife International (2014). The Andaman Teal is found in farflung islands and moves around a lot so it is difficult to estimate its population. Vijayan *et al.* (2006) estimate between 600 and 700 birds, but this appear to be an underestimation.

Among the restricted-range species listed, only two species are very common: Brown Coucal *Centropus andamanensis* and White-headed Starling *Sturnia erythropygia*, while the rest are considered as Near Threatened. Some species such as Andaman Wood-pigeon *Columba palumboides* and Andaman Cuckoo-dove *Macropygia rufipennis* are not rare and many even be abundant locally, but considering their habitat requirement of thick broadleaf primary and secondary

VULNERABLE

Andaman Teal	<i>Anas gibberifrons</i>
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NEAR THREATENED

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

ENDEMIC BIRD AREA 125: ANDAMAN ISLANDS

Andaman Serpent-eagle	<i>Spilornis elgini</i>
Andaman Crane	<i>Rallina canningi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Cuckoo-dove	<i>Macropygia rufipennis</i>
Andaman Coucal	<i>Centropus andamanensis</i>
Andaman Scops-owl	<i>Otus balli</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Andaman Black Woodpecker	<i>Dryocopus hodgei</i>
Andaman White-headed Starling	<i>Sturnia erythropygia</i>
Andaman Drongo	<i>Dicrurus andamanensis</i>
Andaman Treepie	<i>Dendrocitta bayleyi</i>

IN-AN-18



Andaman Wood-pigeon *Columba palumboides* lives in dense evergreen forests in Andaman & Nicobar

evergreen forest, and the threats to these forests, these species are listed as Near Threatened (BirdLife International 2001).

OTHER KEY FAUNA

The mammals of Saddle Peak National Park include the endemic Andaman Horseshoe Bat *Rhinolophus cognatus*, included in List 1 of threatened species in the 1996 IUCN List of Threatened Animals (Baillie & Groombridge 1996). The introduced Himalayan Palm Civet *Paguma larvata tytleri* is also found in this IBA (Pande *et al.* 1991). Twenty-seven species of reptiles and 7 species of amphibians are recorded from this area, including endemic species such as Short-tailed Forest Lizard *Coryphophylax brevicaudus*, Emerald Day Gecko *Phelsuma andamanense*, and Andaman Tree-hole Frog *Ingerana charlesdarwini* (Harikrishnan *et al.* 2014). Saltwater Crocodile *Crocodylus porosus* and Water Monitor Lizard *Varanus salvator andamanensis* are found, but it is difficult to estimate their density.

LAND USE

- Nature conservation and research
- Tourism and recreation
- Hydro-electric power and water management

THREATS AND CONSERVATION ISSUES

- Encroachment
- Livestock grazing
- Agricultural intensification and expansion
- Poaching
- Immigration
- Deforestation
- Firewood collection

Encroachments on the forest land surrounding the settlements flourish and grow in the absence of adequate monitoring and enforcement capacities (Andrews & Sankaran 2002). Some patches of forest have been cleared for cultivation. Unsustainable agriculture and tilling on encroached forest land have led to soil erosion (Andrews & Sankaran 2002). Livestock grazing, hunting, as well as firewood and minor forest produce collection also occur (Pande *et al.* 1991) and put pressure on the island biodiversity.

Ali (2000) has conducted socio-economic surveys of the villages bordering this national park. During 1958–1959, a

large number of refugees were settled here after the partition of India in 1947. They depend on the forests for fuel wood, timber, and house construction.

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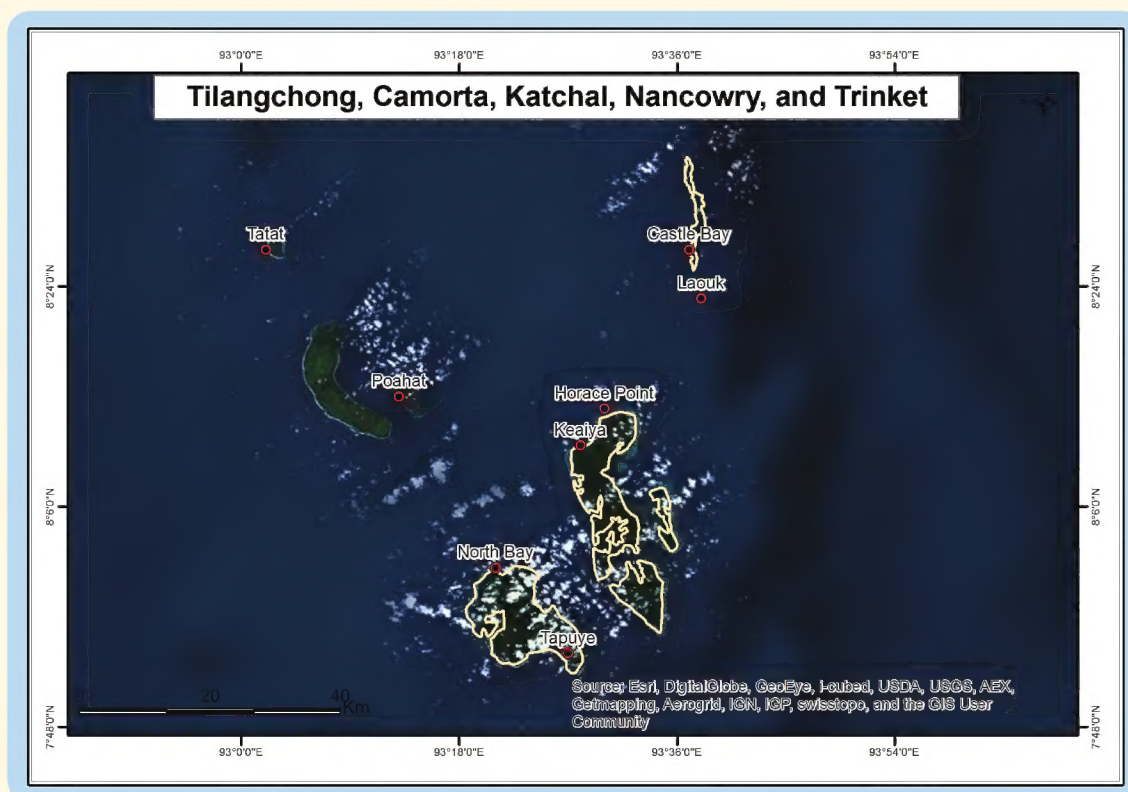
TILLANCHONG WILDLIFE SANCTUARY, CAMORTA, KATCHAL, NANCOWRY, TRINKET

IN-AN-19

IBA Site Code	: IN-AN-19	Altitude	: 0–323 msl
Administrative Region	: Andaman & Nicobar Islands	Rainfall	: 3,500 mm
(Union Territory)		Temperature	: 20 °C to 32 °C
District	: Nicobar	Biogeographic Zone	: 12B Islands: Nicobars
Coordinates	: 8° 11' 60" N, 93° 31' 00" E	Habitats	: Tropical Wet Evergreen Forest,
Ownership	: State		Tropical Semi-evergreen Forest,
Area	: Tillanchong WLS 1,683 ha;		Tropical Grassland,
	Camorta 18,820 ha; Katchal		Littoral Forest, Mangrove,
	17,440 ha; Nancowry 6,690 ha;		Lagoons and
	Trinket 8,630 ha		Beaches

IBA CRITERIA : A1 (Threatened species), A2 (Endemic Bird Area 126: Nicobar Islands)

PROTECTION STATUS : Tillanchong Wildlife Sanctuary, established January 1985.
Others not officially protected but covered in Tribal District with restricted entry for non-tribals.



GENERAL DESCRIPTION

The Nicobar Islands can be divided into three distinct subgroups: the Great Nicobar subgroup, the Nancowry subgroup and the Car Nicobar subgroup. Tillanchong, Camorta, Katchal, Nancowry, and Trinket Islands lie in the Nancowry subgroup of islands, c. 58 km north of the Great Nicobar subgroup. Nancowry subgroup consists of 10 islands and smaller islets of which one island and

two islets are uninhabited (Sankaran 1998). Tillanchong is uninhabited and protected as a wildlife sanctuary (Sankaran 1995).

The climate of these islands can be defined as humid, tropical coastal. The islands receive rainfall from both the southwest and northeast monsoons, with maximum precipitation between May and December, and the driest period between January and April (Sankaran 1995).

The forest type of the Nicobar Islands can be broadly classified as Andaman Tropical Evergreen, Andaman Semi-evergreen, Littoral Forest, and Tidal Swamp Forest (Mangrove), the inland areas being either forest or grasslands, and a significant proportion of the coast being mangroves. Extensive manmade grasslands, created in the 17th century when Nicobar was a Danish colony, occur in large islands of Camorta, Katchal, and Teressa, each of which covers more than 100 sq. km.

AVIFAUNA

A total of 128 species of birds are known from the Nicobar group of islands (Abdulali 1964, 1967; Das 1971). During his study on the Nicobar Megapode *Megapodius nicobariensis*, Sankaran (1998) recorded 57 bird species. Later, Sivakumar & Sankaran (2002) added four more species (Lesser Frigatebird *Fregata ariel*, Large Hawk-Cuckoo *Hierococcyx sparveroides*, Ashy Drongo *Dicrurus leucophaeus*, and Eyebrowed Thrush *Turdus obscurus*) to the checklist. None of them are presently of much conservation concern, but worth monitoring.

Perhaps the most important bird in this IBA is the Nicobar Megapode *Megapodius nicobariensis nicobariensis* occurring on seven islands of the Nancowry group: Camorta, Nancowry, Trinket, Katchall, Teressa, Bompoka, and Tillangchong. The population of this subspecies is between

600 and 2,100 breeding pairs (Sankaran 1998), while the other subspecies *abbotti* is much more common.

The Nicobar Bulbul *Hypsipetes nicobariensis* is exclusive to the Nancowry subgroup. It is facing a threat from the introduced Andaman Red-whiskered Bulbul *Pycnonotus jacosus whistleri*, which is endemic to Andaman Islands, as both species probably occupy the same ecological niche (Sankaran 1998). The British introduced the Andaman Red-whiskered Bulbul to Camorta in the late 1800s. It is now also present on Nancowry, Trinket, Katchall, Teressa, and Car Nicobar (another IBA).

The Nicobar Sparrowhawk *Accipiter butleri* is endemic to the Nicobar Islands. Ali & Ripley (1987) have recognized two subspecies of Shikra from Nicobar Islands: Katchal Shikra *Accipiter badius obsoletus* and Car Nicobar Shikra *A. badius butleri*, while Inskipp *et al.* (1996) and Grimmett *et al.* (1999) recognized only Nicobar Sparrowhawk *Accipiter butleri* as a valid species. Recently, Rasmussen & Anderton (2005, 2012) have also treated *Accipiter butleri* as a full species. Sankaran (1998) considers *butleri* to be endangered. BirdLife International (2001) has listed it as Vulnerable and restricted-range (endemic) because it is confined to the Nicobar Islands Endemic Bird Area (EBA 126). The primary threat to this species appears to be habitat loss.

There are nine restricted-range species in the Nicobar Islands (Stattersfield *et al.* 1998). Except for the Nicobar



ASAD R. RAHMANI

Aerial view of the grasslands of Kamorta Island

Parakeet *Psittacula caniceps*, which has been reported from the islands of Kondul and the Great Nicobars (Abdulali 1964), all the other eight species have been reported from this IBA.

Sankaran (1998) listed 37 bird species from these islands. Recently, Rasmussen & Anderton (2005, 2012) have upgraded many subspecies to full species level. Thus, the 'new' species occurring in these islands include the Andaman Green-pigeon *Treron chloropterus*, earlier considered as a subspecies of *Treron pompadora*. This is still a common bird and Sankaran (1998) found it on all the five islands that constitute this IBA. Similarly, the Nicobar Imperial-pigeon *Ducula nicobarica*, earlier a subspecies of the widely distributed Green Imperial Pigeon *Ducula aenea* (Ali & Ripley 1987, Grimmett *et al.* 1999) was also found in all the islands of this site. The Andaman Green-pigeon is now considered Near Threatened, while the Nicobar Imperial-pigeon is quite common. But both have to be considered as restricted-range species because the total habitat available to them is much below 50,000 sq. km (EBA criteria, see Stattersfield *et al.* 1998).

The Nicobar or Hume's Brown Hawk-owl *Ninox scutulata obscura* has been upgraded to Hume's Hawk-owl *Ninox obscura*. It could be a very rare species as Abdulali (1967) did not record it in the Nicobars, and Sankaran (1998) also did not see it in any of the five islands. It could be one of the rarest endemic birds of the Nicobar Islands. More information is required to determine its status.

On an islet (Hinniöth Malaya), west of Tillanchong Island, a small population of Long-tailed Tropicbird *Phaethon lepturus* is found. A slightly larger roosting population of

the same bird is found further west on the inhabited island of Chowra (Manish Chandi, *unpubl.*).

OTHER KEY FAUNA

The only large terrestrial native mammal is the Andaman Wild Pig *Sus scrofa andamanensis*. Some people claim that even this was brought in by earlier settlers. Other fauna includes the Nicobar Short-nosed Fruit Bat *Cynopterus sphinx scherzeri*, and the endemic Nicobar Flying Fox *Pteropus faunulus*. Thirteen species of lizards and 9 species of snakes are known from this group of islands, whose unique herpetofaunal diversity includes Cantor's Pit Viper *Trimeresurus cantori*, Changeable Pit Viper *Trimeresurus mutabilis*, Wood-Mason's Kukri *Oligodon woodmasoni*, and Red-throated Longtailed Agama *Bronchocela rubrigularis*, which are all endemic species restricted to this group of islands. Other interesting reptiles and amphibians include Nicobar Gliding Gecko *Ptychozoon nicobarensis*, Tiwari's Wolf Snake *Lycodon tiwarii*, and Humayun's Bronzeback *Dendrelaphis humayuni*, all of which are endemic to the Nicobar Islands. Another endemic and Endangered species, Nicobarese Worm Lizard *Dibamus nicobaricus* is also reported from this area (Harikrishnan *et al.* 2014).

LAND USE

- Plantations
- Nature conservation and research
- Agriculture
- Transport
- Tourism and recreation
- Fisheries

THREATS AND CONSERVATION ISSUES

- Plantations
- Infrastructure development
- Hunting, as it is permitted for tribals under WPA (use of airguns rampant, especially for pigeons, parakeets)
- Industrialization
- Natural disasters: earthquake, tsunami

Based on the number of endemics present, the Nancowry group of islands was identified as an IBA of prime importance to avifauna. Katchall, Camorta, and Nancowry were identified as priority areas for avian conservation.

Several developmental plans are proposed for the Nicobar Islands, for tourism and defence installations. Without adequate environmental considerations, such plans could have negative effects on the island biodiversity. After the 2004 tsunami, all affected Nicobarese villages have been relocated to the inner regions of the islands, in contrast to their former traditional coastal habitat. This change in habitat is transforming pristine grasslands and also making room for plantations within formerly untouched rainforests

VULNERABLE

Nicobar Sparrowhawk	<i>Accipiter butleri</i>
Nicobar Megapode	<i>Megapodius nicobariensis</i>
Nicobar Bulbul	<i>Hypsipetes nicobariensis</i>

NEAR THREATENED

Great Nicobar Serpent-eagle	<i>Spilornis klossi</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloropterus</i>
Andaman Cuckoo-Dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>

ENDEMIC BIRD AREAS 126: NICOBAR ISLANDS

Nicobar Serpent-eagle	<i>Spilornis minimus</i>
Nicobar Sparrowhawk	<i>Accipiter butleri</i>
Nicobar Megapode	<i>Megapodius nicobariensis</i>
Andaman Wood-pigeon	<i>Columba palumboides</i>
Andaman Green-pigeon	<i>Treron chloroptera</i>
Andaman Cuckoo-Dove	<i>Macropygia rufipennis</i>
Andaman Hawk-owl	<i>Ninox affinis</i>
Nicobar Bulbul	<i>Hypsipetes nicobariensis</i>
White-headed Starling	<i>Sturnia erythropgia</i>



Tillanchong Island

of the islands, especially Camorta and Katchall. A new road connects the headquarters of Camorta with relatively isolated villages of the north. This road, though a useful development for the indigenous tribes, has also opened up hunting opportunities for settlers and tribals, who can now openly use the road to pass through the centre of forests that used to be difficult to penetrate. Checks need to be put in place on the use of airguns which are only used to hunt native birds, many of which are restricted-range or Near Threatened species in Central Nicobar/Nancowry subgroup (Manish Chandi, *pers. comm.* 2014).

Alteration of the ecosystem would adversely affect and accelerate the extinction of endemic avifauna, including the Nicobar Megapode. This species is also under severe pressure due to hunting and predation of its eggs by the Monitor Lizard. But the primary threat to the Nicobar Megapode is habitat loss due to the increasing human population, this being most acute in the Nancowry group. Over 600 ha of primary forest were replaced with rubber plantations on Katchal. Expanding townships, development of new roads, airstrips, and infrastructure for defence establishments, are all compounding the problem (Sankaran 1995). The islands were severely impacted by the mega earthquake and tsunami of 2004, especially Katchal, Camorta, Nancowry, and Trinket, which have lost a number of coastal villages, mangroves, and forested landmass due to submergence of land.

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